Exploring Sound Emission in Shanghai Zoo as a Public Space

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Abstract

The existence of zoos in cities provokes different reactions in people. Some view it to be an entertaining place to visit on an off day. Now, more often that people are not in favor of zoos anymore, for even though the idea of seeing wildlife in person is attractive, it is also sad to see these animals encaged and even more so under less optimal conditions.

The purpose with this article is to investigate the impact of music and other human sounds in animals subject to captivity in the zoo, and if and how it creates changes in their behavior. The following question motivated the study: Is it beneficial for zoos to introduce music into these animals' habitat?

To find an answer, a joint team went to the Shanghai Zoo on four different occasions to collect data, conduct interviews with visitors and caregivers, and observe both select animals and humans. The selection was done according to continuous availability. The results are presented in the paper.

Keywords: *Urban Entertainment, Zoo Science, Ecomusicology, Animal Welfare, Perception of Safety*

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Introduction

The team gathered data in four separate visits to the Shanghai Zoo and met there at different daytimes in order to cover the entire spectrum of a visiting day. The entire study was self-financed and did not involve high technology except for smartphones with a powerful recording system, good picture resolution, printed paper for questionnaires and a computer to process data and to write the reports that were send in English and Chinese to all participating people and supporters. Data were randomly gathered by using freely chosen visitor numbers, as there were time overlaps with working hours of the staff.

The team separated into smaller groups and followed strictly prescribed question schemes, not allowing for diverted answers.

There were two types of questionnaires, one was for the caregivers, one was for the visitors. We hoped to know more about the animals through talking to the caregivers. In the end, we had to use our own observation notes as caregivers were rarely free, untrained interns, or not willing to discuss details.

Collected Data

Data were mainly collected during times when weather conditions were fitting the undertaking. Also, lacking measurement tools of behavioral scientists, the outcomes are rather limited and based on personal observation.
Caregivers were often not allowed to talk to us despite not having had enough time to discuss single issues with us. Only from time to time, we could listen to their remarks. Loudness and impact of sound could only be subjectively observed and compared through simple means such as trying to measure distances between communicating subjects at times of understanding. All data were collected during normal opening times. We noted weather conditions and temperatures knowing that these data may play a role in dealing with sound. Animals for closer observation were chosen according to their continuous availability and their importance in the structure of guided tours.

On the first visit, May 29, 2021, the team interviewed an administrator of the zoo, who preferred not to have his name mentioned in any articles, and although he seemed hesitant to be interviewed, he agreed to answer a few questions designed in the first questionnaire:

1. Can you observe changes in the behavior of animals after introducing slow and low volume music to them?
   – *Yes, some animals got more used to human visitors.*
2. Is the permanent presence of music changing any living patterns of animals?
   – *Eating habits stay the same, but the tolerance of visitors is increased.*
3. Do you see a difference in their behavior while responding to visitors?
   – *Over the time, animals become more adjusted to their life here.*
4. What are the most difficult behaviors in visitors and how should animals respond to them?
   – *Feeding, throwing things, yelling.*

After leaving the administrative building, the team entered the zoo, walked around the main path marked on the map, made an overall observation of the animals and visitors, located the speakers and identified the music playing.

Figure 1. Map of Shanghai Zoo including position of loudspeakers compiled by Gisa Jähnichen (This map is not available in any other language than Chinese).

We interviewed visitors in three different days, chosen by weather possibilities in the respected time frame, and got the following outcome after having reached out for some 26 different visitors who passed by at speaker Number 6 and Number18, that were chosen due to their strategically important location of interest (most people passed these points as there were toilets and small shops nearby):

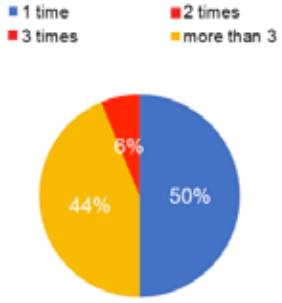

Figure 2. How many times have you visited the zoo? (The red zone combined those who visited 2 or 3 times).

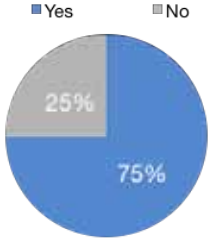

Figure 3. Are you aware of the music in the background?

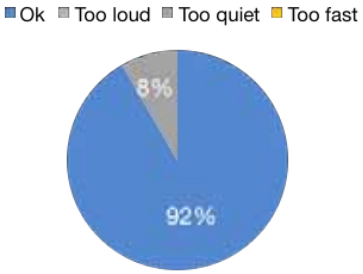

Figure 4. What is your opinion about the music being played? (None of the people asked answered with "too fast" or "too slow." Also, people found the music never "too loud," but 8% found it "too quiet").

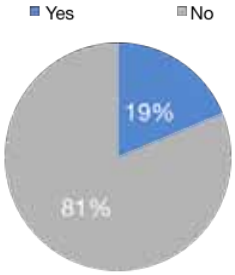

Figure 5. Would you change the music?

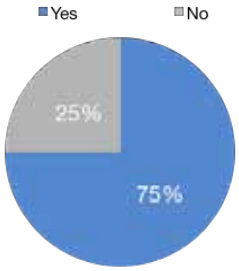

Figure 6. Do you personally feel safe in areas where there is music?

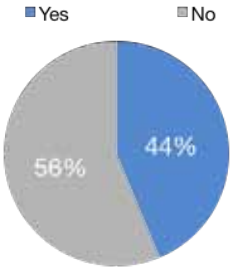

Figure 7. Do you feel attracted to areas where there is music?

On arrival at the zoo's main entrance, there was immediately a disturbingly loud and repetitive megaphone playing an instructional message in an endless loop. This was noticed to be a common greeting in almost every public park known to the team in urban and peripheral China. It is unclear whether messages actually get across this way, but it surely makes one not linger. Perhaps that's the intention after all. Here comes the protocol of the observation of the ring-tailed lemurs:

Ring-tailed Lemurs (Lemur catta) - Madagascar
Date: June 4, 2021
Observation time: 10:45 to 12:15
Weather: 23°C, overcast
By Loudspeaker: 13

Figure 8. Lemurs at the Shanghai Zoo June 4, 2021 (photo by author).

Soundtrack: Classical: Blue Danube Waltz (Johann Strauss II); Rock: Do You Know, Electric Blue, Empty, This Is the Day, Chocolate Brown, Close to You, The Concept (The Cranberries)

Observation Sheet
The weather was overcast with a temperature of 23° Celsius. The closest speaker to the observation point was number 13, which was barely audible to human ears. Big city sounds such as airplanes, vehicles and people speaking did not seem to change the lemurs' behavior, neither did animal sounds such as monkey calls and bird singing. During the observation time, the background music stopped for around one hour.

The lemurs' environment was outdoors and surrounded by water, creating a small island with no need for cages or metal grids. Adults and pups stayed together outside, instead of inside the wooden houses available to them. There were more than ten lemurs in this environment and one appeared to have an injured arm. The adults spent most of their time grooming themselves and each other, sitting and observing. Pups spent their time playing with each other, running around and jumping on adults. At this point, the lemurs mostly stayed close to the center of their land, far away from the water.

Since the speakers were off for a while, one team member, Paula, decided to sing a song in order to detect their reaction or non-reaction to music. When she sang a first song, 'Lullaby,' many came by the water and remained there. They seemed curious and even though male lemurs use vocalization in conjunction to agonistic behavior, they did not seem alarmed by the singing.[1] Humans also approached. Shortly after, visitors started feeding the lemurs – without any authorization or supervision from the zoo staff. After being fed, they did not get back to where they were originally playing when the observation group arrived. After 15 minutes, a second song was sung to see if it would generate a different reaction. When singing 'Mercedes Benz' they stayed where they were and it did not change their behavior. At 11:50am, the speakers began playing music again and the lemurs became very still, some even napping. Following, an announcement was broadcasted on the speaker, but it didn't change their behavior, they remained mostly unmoving.

Further Observations of Specific Animals Interacting with Humans

François' Langur** (Trachypithecus francoisi) - **Southwestern China to NE Vietnam
Date: June 4, 2021
Observation time: 12:42 to 13:01
Weather: 24°C, overcast
By Loudspeaker: 12

Figure 9. François' Langur monkeys at the Shanghai Zoo June 4, 2021 (photo by author).

Soundtrack Classical: Warsaw Concerto (Carmen Habanera)

Observation Sheet

These monkeys live in an environment enclosed by metal grid fencing. There were hundreds of elementary school students divided into a few groups, each group had only one to three adult supervisors. The noise generated by them was exces-

sive and the background music was buried under it. The children visitors fed the monkeys by throwing processed foods at them, they screamed, teased them with objects, jumped on the fence and tried to reach monkeys with their hand near the fence. Meanwhile, their supervisors did not correct their behavior, instead they encouraged it by laughing. There were not enough adults watching the children and I was under the impression that they either had no idea of how to educate these students, or had already given up doing so on the account of being so outnumbered. One of the monkeys had an injured middle finger, which was cause for many laughs between the children and their supervisors. Zoo visitors teasing and disrespecting animals is unfortunately neither a local nor a contemporary problem.[2] Some of the adult monkeys were reaching out for food, but mothers and small pups stayed quietly near the fence.

Monkeys seemed unaffected by the music, since it was overpowered by human voices. There were no staff members supervising this area and adults also fed the monkeys, even precisely in front of a sign prohibiting it. An artificial waterfall was started, but it also did not seem to change anything. Some of the children came to see my notes, some talked about me, and a few pushed me.

Eurasian Brown Bear (Ursus arctos arctos)
Date: June 9, 2021
Observation time: 14:45 to 15:00
Weather: 29°C, overcast
By Loudspeaker: 2

Figure 10. Eurasian Brown Bear pups at the Shanghai Zoo June 9, 2021 (photo by author).

Soundtrack Classical: Trumpet Voluntary (Jeremiah Clarke)

Observation Sheet
This time taking the zoo's public car to move around, the ride was fairly quiet, save for the occasional honking, and the road was not too close to the animals. The Eurasian brown bear areas were outdoor deep enclosures of concrete and

rocks, one of the chambers housed one adult the other two pups. The music from the speaker was not loud and the adult bear seemed undisturbed by it – it mainly remained grooming itself. The pups were restless and they were unsuccessfully trying to open some doors that led to an indoor environment, which I suspect is the place where their food comes through. As the speaker could not be heard in the pups' chamber, I sang "So Long, Farewell" to them, but that produced no change in their behavior. The bears finally reacted differently when some visitors started tossing food at them. The response was quickly noticeable, they came as close as they could, started making noises and one of them started waving his paw as if asking for more.

This was a short observation, but long enough to once again find visitors feeding processed foods to wild animals. The music did not help with that.

Discussion

What I concluded by observing these animals in the zoo, was that sometimes they demonstrated a positive or neutral reaction to music that was neither aggressive nor loud. When non-human animals had a reaction to music, it appeared to be beneficial. Some songs inspired curiosity, others calmness as if having been in a therapy area (Jaehnichen, 2018) and other times they seemed completely unaffected by it. Perhaps music helps them get accustomed to human sounds and reduce the unfamiliarity of it. Animals and music have a long association (Putnam, 2007:157).

The very loud student groups visiting the monkey area were a significant source of distress to those monkeys. The number of hours in which they are subject to this experience daily is unknown, although I know one is already too many. Ideally, they would never have this experience. The sounds were not the only source if distress, the feeding of inappropriate foods caused the most noticeable reactions. Every time I witnessed a visitor feeding one of the animals, and it happens to all three types observed, the animals completely changed their manners. Once fed in this way, it takes a long time for them to resume their normal activities, not to mention the impact that these aliments have on their bodies.

Music also happens in areas that are inhabited both by animals and humans (not with the same order and structure as we conventionally attribute to it), finding that animals react to music is really not surprising. If one considers that long before any musical instrument was manufactured, birds and whales were already singing,[3] one should expect a reaction from non-human animals coherent with the sound/music that is being presented to them. On the whole, it must be admitted that animals and birds are much more appreciative of our music than we are of theirs, for when we do like it we reward the executant by shutting him upon a cage for life (Front Matter, 1897).

So, what can be done about this? One can start by not going to zoos anymore, teaching children that it is wrong to subject them to life in captivity and support serious efforts to preserve their habitats. For zoos not only enshrine the (arbi-

trary) boundaries of humanity and animality, they impose their own boundaries between creatures defined as animal —different enclosures separate paddocks that segregate not only keeper and kept but also (non-human) animal from (non-human) animal, birds from reptiles (Anderson, 1995:278).

Since human made music is not encountered in the animals' habitat, should it be used in zoos or avoided? Although it may be a helpful tool keeping non-human and human animals calmer, the more important question is:

Should wild animals be made to be used to human sounds? In a context in which animals are perhaps inhabitants of sanctuaries which actually help them rehabilitate to life in the wild or those who cannot go back and need a safe place to live, I think yes. In a context in which animals are in captivity merely for exhibition and source of entertainment, I think no. Not because music is harmful, but because they shouldn't be there in the first place. Depriving a living creature from the life they should have the right to live is wrong in my opinion. This matter becomes clear once one is able to imagine oneself under these animals' skin, which should not be so difficult to do hence not so long ago, and to the surprise and outrage of many, some zoos housed human exhibits.[4]

Part 2:
Sound-Guiding Large Groups of People through Sound in the Shanghai Zoo

Among the long-time observations, choices were also given to the penguins. Here, is an example of the analyses of our observation notes taken by the team member Gisa Jähnichen. First step is the plain text and time analysis for the penguin observation. There are marked only time and simple facts through underlining and making time numbers bold: In a next step, all spontaneous notes regarding sound and motivations were marked through italics.

Observation sheet

Penguins, Shanghai Zoo.
June 4, 2021.
Music from speakers 1 and 18.

Little background noise, Strauss valses playing. Penguins calm, busy with body care. Small group visitors chatting louder over the music. Started observation at 10:36. Nothing much happens. The music is at a very low volume. The penguins sleep. One couple runs around. They are irritated by a plane making noise. They listen to other birds. Visitors do not irritate them. 10:55 big group of mixed visitors comes. Penguins are curious. Three taking to the water to get closer. Music is off, seemingly. 11:00, the foreign birds came in. They cooed at 11:04. Temperature is ~25 Degree Celsius. Two males swimming through the new fake plants. Their water immersion never lasts longer than 2 Minutes. Another group of 3 goes bathing at 11:11. I talked to one caregiver. Can it be that he called the music off? I found 2 more speakers on the way. Now, 11:15, many small groups flock in. Noisy, the penguins withdraw their attention. Just swimming from time to time. They only show interest in an elderly women with plastic bags full of food. I had to stop one

from feeding cherries to the penguins. Started Flute-playing. They find it interesting. Maybe, because of the flute looking like a water plant. They do not like people shouting. They look away and hide. The foreign bird hunts smaller birds. But the penguins are not thankful. The foreign bird is pretty much alone. All animals react to singing very obviously. They find it attractive. And come closer. Then they continue working on their fake nests. The foreign bird takes a bath with its long legs. The three penguins who swim the most are 2 males and 1 female. Still very young. They chase each other but stay clear of the foreign bird. Now a big group of noisy children coming. Penguins hide and look into another direction. I finish observation ay 11:32.

Figure 11. Left, a heron-type of bird regularly visits the penguins. Right, the penguins love going for a swim and playing with the artificial water plants. Here, a couple (the smaller penguin is the male one) approaches their 'beach.' (Photos by the author).

This textual analysis was followed by visual marking of situations through taking corresponding photographs. In a later step, the way how these photographs are taken and what type of observation bias is playing a role can be analyzed. Here, in the primary observation, an 'invader' was found that tried to be hidden through adapting to the behavior of the penguins. However, this type of bird not only eats smaller birds but also eats fish and there are living many of these birds (heron type) in the area of the zoo. The penguins ignored or mocked the bird, possibly through the food concurrency the bird imposed on them.

Discussion Beyond the Observation of Zoo Animals

In a follow-up meeting of the team, we discussed:

- To the animals and to the visitors, it obviously does not play a role which music is played. So, this music should be completely legal regarding copyright issues.
- The intensity of sound plays a role to all beings.
- It seems to be important to give options.
- The music played is better used in guiding humans than non-humans.
- Zoo animals we observed are oversaturated with noise. Can this be reversed?
- In music breaks, animals react surprised to natural sound environment. Their short memory capacity may help overcome strange feelings. They can be re-introduced into non-sound treatment.

- While humans might be already long-term conditioned to a necessary loudness in order to feel safely surrounded by the same kind of beings. Can this be reversed as well?

The research tasks carried out in the Shanghai Zoo have shown that most of the time, it does not seem to play a role which music/sound is played, how long, and in which frequency. Important is only that music is played at all and that this music is not too loud. The purpose of the sound emission was probably a positive adaptation to human made sound among all beings in the zoo, but this purpose might have been long time forgotten. Zoos, farms and other facilities where animals are held captive, sometimes 'enrich' the animals' environments with objects and experiences such as ropes, toys, aromatherapy and music to stimulate a desired behavior. It has been studied that musicotherapy can have a positive effect in animals in captivity.[5]

My part of this research is dedicated to the question of reviving or developing a purpose of sound emission in public spaces. Does sound emission in general increases the feeling of safety? Does sound emission coming with this purpose depend on the musical contents? If so, which music is played, how long, in which shape and quality?

These questions were then examined case by case. The research was extended to other places with publicly emitted low volume sound, especially in highly frequented places at tourist destinations and in urban parks.

Another Hypothesis for Future Studies

The sound that was emitted in the Shanghai Zoo as well as in public tourist spots around Sanya and Baoting on Hainan Island, was gathered and put into a playlist by a person that is often not working in this field anymore. It can have been an intern or a temporary worker who got this task in an unprepared way and just searched for some sound pleasant to themselves and respecting one's own taste and preferences. Interestingly, the average musical taste and the common preferences of listening to low volume emitted sound in public spaces is adopted to this kind of musical contents. Since the average age of the population is increasing, too, the main group of listeners or users among humans is also recognizing this average and unrefined musical taste. Younger audiences may find it a bit old fashioned or little attractive in terms of musical effects. However, also younger audiences agree to the purpose of music emission and do definitely recognize this kind of music as a specific type of music played in public spaces. By them, an age-respecting musical contents or an adaptation to individual preferences is not anticipated. Only schools or similar institutions for small children may have another playlist, which is possibly created by people of a higher age who follow their primary imagination when choosing musical contents, hence creating a kind of "children music list."

Conclusion

Generally, visitors agreed to the music played. It was remarkable that most visitors felt safer although they did not always feel attracted to the music. Also, the animals were obviously quieter in the presence of loudspeakers, especially observed with the larger birds. They have partly shown surprise when the music was off. Some needed the music to behave normally, such as the Katta, which slept with the music on. A general response could be observed with animals responding to human singing. This phenomenon needs further investigation.

The behavior of the visitors is at times dangerous to the animals and to themselves. It may need a long ongoing education to respect all beings. This education should include all people, not only children.

Music emission can contribute to guide visitors, yet overlapping sound should be avoided, such as observed near the parrots. The music is not to entertain the staff but to guide the humans and to calm the non-humans. Clean sound strategies are as important as clean air and water. The Zoo can improve sound quality by choosing better articulated music that is still well perceivable in low volume, and by planned breaks. Finally, copyright issues may emerge if the choice of music does not follow the basic requirements. This project will extend to select living spaces and gathering spots at different places in China in order to find a larger amount of data. Until now, we collected interview data, pictures, video clips, and descriptions of observations that mount up to approx. 5 GB.

Endnotes

1 Overall, I found that of the five vocalizations tested, the yip, cackle, and twitter calls were used as agonistic submissive vocalizations for the male ring-tailed lemur. (Bolt, 2021: 430).

2 At the annual general meeting of the Dublin Society in 1861, two members complained that Sunday visitors teased animals, broke branches of trees and cut flowers. (De Courcy, 2010: 113).

3 Singing in this context means rather the production of structured sound using one's voice.

4 Human exhibits, also known as ethnographic displays, were a popular practice in Europe between the middle of the 1800's until 1958. In display were people native from foreign lands, mostly African countries, supposedly demonstrating their local behavior and customs to visitors.

5 de Assis Maia et al (2011) report that sounds are able to influence the behaviour of animals and can be used as positive and negative reinforcement, which is related to the cognitive capacity of animals. (Maia et al, 2013: 2868).

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