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Ethics and Human-Animal Studies

Welcome to the "Zooture"

On the Future of Zoos and Their Role in Wildlife Conservation

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Abstract

The concept of the zoo has been around for centuries. It has remained relatively unaltered ever since the 19th century menageries were changed into the so-called modern zoo when German animal dealer Carl Hagenbeck rid them of some of their bars and cages over one hundred years ago. Today, the zoos' self-understanding centres around four pillars: education, recreation and entertainment, scientific research, and wildlife conservation. Along three lines of argumentation (animal welfare-oriented arguments, conservation-oriented arguments, and ethical arguments beyond welfare and conservation), the concept's pitfalls will be introduced, analysed, and discussed. My analysis reveals that essentially, the zoo remains to be a place with the human visitors' interests at heart, not the non-human inhabitants'. I demonstrate which changes need to be made for the zoo to become an ethically less problematic institution, showing what the institution's future should look like, and what it will have to morph into with wildlife conservation being the most integral part of their future.

Zusammenfassung

Das Konzept des Zoos existiert seit Jahrhunderten. Seitdem der deutsche Tierhändler Carl Hagenbeck die Menagerien des 19. Jahrhunderts vor gut 100 Jahren von einigen ihrer sichtbaren Gitter und Stäbe befreit hat, hat sich jedoch am Charakter des so genannten modernen Zoos wenig verändert. Heutzutage fußt das Selbstverständnis des Zoos auf vier Säulen: Bildung, Erholung und Unterhaltung, wissenschaftliche Forschung und Arterhalt. Anhand von drei Argumentationslinien (Tierwohl-orientierte Argumente, solche des Arterhalts und ethische Argumente jenseits von Tierwohl und Arterhalt) werden die Schwächen des Konzepts vorgestellt, analysiert und diskutiert. Meine Analyse zeigt auf, dass der Zoo das bleibt, was er seinem Wesen nach schon immer war: eine Institution, in der die Interessen der menschlichen Besucher im Vordergrund stehen und nicht die der nicht-menschlichen Bewohner. Darauf aufbauend zeige ich auf, welche Veränderungen notwendig sind, um den Zoo zu einer ethisch weniger problematischen Einrichtung werden zu lassen, wie der Zoo der Zukunft aussehen sollte und in wie weit das Konzept gewandelt werden muss, um den Erhalt von vom Aussterben bedrohter Tierarten zu seinem integralen Part werden zu lassen.

To the zoo -
and its future

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1 Introduction – Zoo Dilemmas

The concept of the zoo has been around for centuries. It has remained relatively unaltered ever since German animal dealer Carl Hagenbeck rid them of some of their bars and cages over one hundred years ago. Today, the zoos' self-understanding centres around four pillars: education, recreation and entertainment, scientific research, and wildlife conservation. I will introduce the zoo's self-understanding and draw my hypothesis from their present state.

1.1 Scope, Aims, and Methods

In this introductory chapter, I will explain my aims and methods and expand on the present state of zoological gardens around the world, focusing on the Western World and its so-called "modern" zoos.

Collections of animals have been around for centuries, even millennia (see e.g. May, 2015; Goldner, 2015). The purpose of these collections, however, has changed dramatically over the last decades. And the character of those institutions keeping wild animals is likely going to change even more drastically over the next decades, given how much our relationship to other non-human animals has changed recently. What was once considered a display of wealth and power transformed into a tool of scientific inquisitiveness, education, and, above all, species conservation. But is this enough a reason to keep animals in captivity? And what should the next steps be in order to keep pace with the ever-changing human-animal-relationship?

In my thesis, I expand on different views on wildlife conservation and the role zoos play in it. I will show how the institution's present state fails to fulfil what it sets out to achieve and ask the following question: What should zoos in the future look like to be ethically more permissible institutions than they are today?

On the following pages, I will approach this question by investigating three major lines of arguments from the zoo ethics debate in human-animal studies and by analysing to what extent their arguments can help to map out the future of zoos. In doing this, I question and analyse to what extend the present-day zoo might be ethically problematic an institution by weighing up the status quo in the zoo critic. I will ask what changes need to be made to arrive

at a more satisfying institution. The thesis has three parts: an introduction part, a main part including a discussion, and a summarising conclusion. In the first part of the thesis, I will address the zoo's self-understanding by shedding some light onto the institution's present state in the 21st century, and introduce the four pillars education, recreation/entertainment, scientific research, and wildlife conservation, which the modern and post-modern zoo claims to stand on.

In this first part, a multitude of perspectives will be presented in order to give an overview on the current debate. My main focus will be on critical perspectives coming from non-governmental organisations and activists who have shaped the public debate, and on perspectives provided by scientists and philosophers who have defined the academic debate. The public debate is of importance with regard to the zoo as the public opinion has proven to be a driver of change at the zoo.

In the second part, my aim is to structure three major lines of arguments that are most prominent in the academic zoo debate: animal welfare-oriented arguments, the argument for conservation, and a third group of ethical arguments pointing beyond those two. I will discuss and contextualise the three lines of arguments with the aim to make their normative assumptions visible and scrutinise them. For that I will contrast them with current trends in zoos that have been named and criticized in the literature. I will discuss whether such trends run contrary to ethical values, specifically contrary to values beyond welfare, like respect and dignity, that are being stressed not only by animal rights philosophers who are critical about zoos but also by the major umbrella organisations (like the World Association of Zoos and Aquariums (WAZA) who mentions such values in their 'Code of Ethics'[1]). Next, the three lines of arguments and their discussion in the zoo ethics literature will be analysed, systematised, and contrasted against one-another taking into account their possible synergistic effects. As the three lines of arguments are usually entertained by proponents from different strains of the zoo debate who largely talk past each other or without knowing about each other, it is a challenging and novel approach to bring the three perspectives together for the first time. The crucial question for my comparative discussion will be whether all three lines

[1] See (World Association of Zoos and Aquariums, 2013).

of arguments might have something in common. I will arrive at and follow the hypothesis that they indeed all point at one major problem of zoos: the problem that they seem to be predominantly designed to please visitor expectations rather than to meet the animals' or species' potential needs.

1.2 The Zoo's State in the 21st Century: Self-Understanding, Aims, and Justification Strategies

In this part, the concept of the "four pillars" first described by Heini Hediger will be introduced, and the self-understanding of the modern zoo outlined. This is done to understand on what basis the modern zoo stands and how far changes might be introduced.

When discussing an institution, which is defined "as is an organisation or other formal social structure that governs a field of action", and when this institution takes the specific form of a zoo, it is of course mandatory to define more clearly, what the field of action or the structure of this specific institution are, and what it stands for in our society (Rojas, 2013). As explained in encyclopaedias, the term "zoological garden" itself originated from the word zoology: the term deriving from the Greek *'zōion*, "animal," and *logia*, "study". This already indicates what the term might aim at and refer to: "an establishment, which maintains a collection of wild animals, typically in a park or gardens, for study, conservation, or display to the public", as exemplified in general lexica definitions (see e.g. Lexico, n.d.). By law, as found in the UK Zoo licencing act, which remained unchanged in its core since 1981, "a zoo is defined as any establishment where animals of wild species are exhibited to the public" (Department for Environment, Food and Rural Affairs, 2012, p. 5). The ethical zoo debate picks up on the public display aspect and emphasizes decisive purposes of the zoo. Jamieson (2006: 132), for example, writes that zoos "are public parks which display animals, primarily for the purposes of recreation or education" (Jamieson, 2006, p. 132).

It seems that zoos have undergone many changes that affected how their role and purpose was and is defined. Therefore, it is helpful to look at their current self-understanding. At least some zoos are represented by prominent umbrella organisations like the World Association of Zoos and Aquariums (WAZA) or the European Association of Zoos and Aquaria (EAZA).

The WAZA's mission is "to guide, encourage and support the zoos, aquariums and like-minded organisations of the world in animal care and welfare, environmental education and global conservation" (World Association of Zoos and Aquariums, n.d.). In terms of numbers, the WAZA already consisted of more than 1,200 institutions in 2008, which together attracted over 600 million visitors per year (Holtorf, 2008). Within a decade, this figure has soared up to 700 million visitors in 2018 (World Association of Zoos and Aquariums, n.d.). The smaller EAZA with its 400 zoos states "that more than 140 million people visit EAZA members each year, equivalent to approximately one in five European citizens" (European Association of Zoos and Aquaria, 2019).

In my thesis, the terms "zoo" and "zoological garden" will be used interchangeably. Both terms refer to what is known as the "modern zoo", which I will go into detail about on the next pages. The concept of this modern zoo is defined by four different goals: Conservation, education, research, and recreation (Hosey et al., 2013, p. 1).

A lot has been written about the evolution of the zoo elsewhere and how it came to be the institution it is today (see e.g. Rothfels, 2002; May, 2015). What has turned the antediluvian zoo into what is referred to as the "modern zoo" these days can be traced back to the German animal dealer Carl Hagenbeck who was the first to drop the bars and redesign what he thought was resembling the inhabitant's natural habitat. Drawing the human crowd's gaze away from the bars, thereby "'managing eloquence' – attempting to redirect the audience from seeing and imagining an animal's fate in captivity – is perhaps the fundamental feature of Hagenbeck's park" still found in Hamburg, Germany, to this day (Rothfels, 2002, p. 197). On first sight, the more naturally looking zoos seem to have become a "better" place for the animals. But closer analyses often arrive at more differentiated evaluations. Although a century has passed since this great leap forward, not a lot has changed since this "illusion of freedom so carefully created in Hagenbeck's innovative exhibits and so carefully maintained in such modern zoological gardens as San Diego's Wild Animal Park and Disney's Animal Kingdom controls the expressiveness of the animals" within (Rothfels, 2002, p. 197; Beardsworth & Bryman, 2001).

To some extent, the relationship between the stakeholders on either side of the enclosure barriers has changed over the past century as in these "new zoos […] with their carefully deployed plants and illusions of freedom which trace back to Hagenbeck's park, the person poking the rhino with a stick to get it to move is shunned" (Rothfels, 2002, p. 197). And with growing concerns for animal rights and animal welfare, a master narrative, surpassing the former idea of lavish and flamboyant displays of wealth and power needed to be found, especially in light of events like the "disappearance of the American bison and concerns over the commercial slaughter of animals in Africa" that forced zoo advocates to proclaim that their "gardens might serve as sanctuaries not simply for a weary public but for a threatened animal world" (Rothfels, 2002, p. 199).

Zoos have transformed from collections of caged animals to places mimicking the animals' natural habitat for those outside the enclosures. Loosing the bars and replacing cold steel with glass thereby allowed for an even closer contact, and it is this change the modern zoos trace their origin back to. Hagenbeck's greatest effort was that of changing the narrative of the zoo into one of "freedom and happiness" (Rothfels, 2002, p. 199). Before this change, "zoological gardens often struggled to convince the public that it was not so bad to be an animal at the zoo. Beginning with Hagenbeck, the gardens began finally, and more or less successfully, to re-narrate the captive lives of animals" (Rothfels, 2002, p. 199). Ever since this change, the idea was that the zoo's inhabitants "have not been collected merely for reasons of science or education, or even really for recreation – animals have been put in zoos increasingly because they are nice, healthy, safe places to be and because the animals, we are told, might be better off there than in the 'wild'" (Rothfels, 2002, p. 199).

Yet, whilst there have been changes from the time when "zoos were more like gardens than museums, more artifice than nature, and the information about animals was scarcely more than the labels on plants of trees" (Franklin, 1999, p. 68), the keeping of wild animals in captivity still is criticised, just as the concept of a zoo itself is as I will show on the following pages. With all the criticism voiced one "would expect that an ancient institution such as the zoo would have long exhausted its selling powers, but the zoo continues to attract the masses" to this day (Braverman, 2011, p. 809).

The fact that it is attractive to the masses might have to do with the master narrative modern zoos and the WAZA emphasize: the new focus on conservation (WAZA, 2005, 2013; Beardsworth & Bryman, 2001; Carr & Cohen 2011). It is this change in self-understanding that gave the new modern zoo a new purpose. In order to gain scientific traction, zoos "collected, organized and shared genetic data. They collaborated on species recovery schemes. They transformed from entertainment venues to centres for education and conservation" (Di Cintio, 2010).

The continuous draw of the masses may or may not be linked to this new master narrative of the zoo. A narrative, as I will expand on, that is more than just a purpose the remaining institutions need, but a vindication. A vindication that can be found in four different pillars of the zoo: "in addition to entertainment, zoos claim to provide an educative function, a research function and a conservation function" (Garner, 2005, p. 141). The Swiss zoologist Heini Hediger first introduced these four pillars more than 75 years ago (Hediger, 1942). These four pillars, as well as their implications are heavily debated by scholars from different backgrounds. On the following pages, I will shed some light onto arguments in favour and against each of these four pillars.

1.3 The Four Pillars of the Zoo

Education, recreation for the public, scientific research, and conservation are referred to as the "four foundation pillars" of modern zoos. In this part, I will dissect each of these four pillars and weigh those arguments in favour of zoos against those from the zoo critique arguing against the concept of the zoo. Methods of education used in zoos to this date are discussed in terms of their effectiveness. The importance of the zoo as a recreational hub for people and the anthropocentric air of the notion itself will be pointed out. The idea of scientific research conducted in zoos will be put to the test and pitfalls highlighted. Finally, the conservation claim will be scrutinized. The importance of wildlife conservation for animals as well as zoos will be shown.

1.3.1 Education of the Public

The first of the four pillars names education of the visitors coming to the zoo as a main purpose and goal. The modern zoo argues that "zoos and aquariums, because they are popular visitor attractions, have unique opportunities to introduce their visitors to a wider world and to explain the issues of international conservation", that WAZA members are able to "greatly

enhance visitor awareness of conservation matters, both problems and solutions, by integrating their own work with that of other conservation bodies" (World Association of Zoos and Aquariums, 2005, p. 13).

Even a new association, the International Association of Zoo Educators, has been founded in 1972 to engage its "members worldwide to achieve biodiversity conservation by encouraging sustainable behaviors in people that visit zoos and aquariums" and thereby "conserve global biodiversity through effective zoo and aquarium programs" (International Association of Zoo Educators, n.d.). Albeit having over 300 members around the globe, some of the major zoos are missing in the list. However, the association is "affiliated to IUCN, and its members [are] very aware of their important role worldwide in stimulating concern among the young for disappearing wildlife" (Bostock, 1993, p. 176). Furthermore, the association deliberately points out that they increasingly involve "members from underdeveloped countries, where there is an urgent need to interest children in their own wildlife" (Bostock, 1993, p. 176).

Especially with an ever-growing detachment of people from nature zoo education is becoming more and more relevant. The education about the animals on display, serving as ambassadors for their wild counterparts and their habitat, can allow for a deeper understanding of and growing sympathy for the natural world. By educating their visitors zoos help people treasure and cherish wilderness and thus can have a great societal benefit. Supporters of zoos say that unlike anything else, "educational programs that use live animals as teaching tools provide an experience incomparable to that of observing the same animals on video or in print" (Fuhrman & Ladewig, 2008, p. 32). The main argument brought forward here is that, by showing the world's biological diversity "facilities such as zoos, aquaria, and wildlife parks serve as significant sources of information about the environment" (Adams, 2013, p. 427).

In short, "living animals can provide opportunities for unique, multi-sensorial educational experiences" zoos argue (Fa et al., 2011, p. 248). This goes to show that "educating the public about animals, and raising their awareness and support of conservation, are both fundamental parts of the modern zoo" (Hosey et al., 2013, p. 468). The major argument for the zoos' educational provision is that zoos are "making available to children and adults real animals to

observe, but there is a great deal that zoo educators can do either in person, or by means of educational aids produced by them for teachers to use, to concentrate that contact with animals into an *educationally constructive experience*, and one which helps to stimulate concern for the conservation of animal's wild habitats" (Bostock, 1993, p. 176, my emphasis).

Just how much impact good zoo education can have on the visitors' understanding of our natural world and its conservation became evident a few years ago in Germany, when zoos published numbers on how many gorillas end up as "bush meat" in Africa annually. Several European zoos started a campaign to raise awareness for this atrocity, the heinous practice of killing and eating apes. As former director of Cologne zoo, Gunther Nogge claims, this resulted in the support of almost 2,000,000 zoo visitors signing a protest note that was the most successful of its kind so far and forced the European Union to engage with the problem, pass a resolution to try and stop it (Nogge, 2014). Although it is hard to prove, according to him, this demonstrates that living animals and the zoos they are living in "have the unique ability to inspire hundreds of millions of people every year to make the right decisions with regard to their own place, role and responsibilities" in our shared world (Dickie et al., 2007, p. 357). Without even meaning to play the *advocatus diaboli*, it appears to be arguable, whether people really gave their signatures because of the animals within the zoos. Perhaps it was the simple information about the bush meat crisis itself that gave rise to their concern and moved them to sign, not the possibility of seeing its potential victims incarcerated far away from the problem at hand. If so, any other wildlife conservation organisation could have collected these signatures without displaying animals and the zoo's only advantage might have been that so many people pass their gates.

There are however, plenty of arguments against the effect of educational efforts and even the general idea of being able to deliver any educational benefit in a zoo. The educational function of zoos is disputed by claiming that "the complete failure of zoos to succeed in their supposedly educational mission seems to stem in part from the fact that many of them make no real effort at education" to begin with (Rowlands, 2002, p. 155).

One of the most common arguments is that instead of “providing a true learning experience about the value of, and need for, conservation, zoo educational experiences, particularly informal ones, may actually do little more than provide a socially acceptable veneer to the entertainment on offer” (Carr & Cohen, 2011, p. 179). And whilst zoos try to sensitise and educate, studies on the gazing time suggest, that this endeavour fails to be successful in most cases. Often times, zoo visitors pay little more than a few seconds attention to a singular animal exhibit, its animals and their conservation status before wandering off to the next attraction (Benz-Schwarzburg & Leitsberger, 2015, p. 18). Very little of the time spent at the zoo is in fact spent learning about the animals. Previous studies on time spend at the zoo found that only “41% of which was spent looking at animals and 9% of which was spent engaged with interpretive elements” (Ross & Gillespie, 2009, p. 462). In addition to this, the visitor behaviour according to demographics is of interest, too. Most people visiting zoos are visiting them in groups, also a lot of school classes visit them as part of broader educational programs. There are however “significant differences in the way visitors used signage: those in groups without children spent more of their visit engaged with signage than those with children and visitors who spent more of their visit interacting socially spent less time engaged with signage” (Ross & Gillespie, 2009, p. 462). In addition to this, those “educational elements isolated from animal exhibits were highest in terms of both holding power and attracting power” (Ross & Gillespie, 2009, p. 471). Furthermore, there are hardly any long-term effects on the consume behaviour of zoo visitors. Also, research faces profound gaps in comparing the knowledge about animals of people who recently visited a zoo and those who have not (or never do).

All of this supports the general idea that “for most people, most animals are not interesting enough to command more than fleeting attention” and that “indeed, most animals are likely to be viewed in passing unless the animal does something to bring the spectator to a halt“, indicating that education is not a main pull factor for visitors (Ludwig, 1981, p. 314). Instead, these visitors are most likely to stop, “at least momentarily, for 1) animals that beg, 2) animals that are feeding, 3) baby animals, 4) animals that make sounds, or 5) animals that are mimicking human behavior“ (Ludwig, 1981, p. 314). More recent studies on visitor behaviour in principle support this. Even in modern immersive exhibits visitors seem to be on the

lookout for what they perceive as attractions. The kind of animals on display, not necessarily their conservation status, plays a major role in visitor attention as enclosures housing "large mega vertebrates", the so called charismatic megafauna, are of greatest interest (Ross & Gillespie, 2009, p. 471).

And last, but certainly not least, there is only so much a visitor can learn about an animal at the zoo and the didactics surrounding it: one can learn how large the animal is and what it looks like, perhaps one can even smell and hear it, but the fascination we have with animals, their peculiarity and behaviour, especially in large and complex social groups, is something one can never fully grasp in a zoo. Even though many zoos "have beautifully designed labels these days; […] very few indeed tell you what you really want to know: why these particular animals are in this particular enclosure; how they are kept; which individuals dominate which; whether the particular population is part of a coordinated captive breeding plan; what is the status of the species in captivity and in the wild" (Tudge, 1991, p. 255). Instead, the information found on most signs at zoos is "of a far more general kind; often the kind of thing you could find in any children's encyclopaedia. In short, very few zoos really do enough to encourage that minority of people (I would say an important minority) who genuinely would take the trouble to become connoisseurs" (Tudge, 1991, p. 255). If there is indeed hardly anything to be learned from a zoo and its didactics that cannot be found in any idle children's encyclopaedia on animals, the education pillar is certainly not convincing enough an argument for keeping (formerly) wild animals in captivity.

Naturally, this tilt could be diminished by more attractive means of conveying information to "the apathetic and unappreciative character of the majority of the zoo-going public" (Rowlands, 2002, p. 155). In a way, this is done already in some forward-thinking zoos. More and more zoos, especially those in the U.S., have been and are developing more sophisticated technological approaches to convey experiences transcending those of looking at displayed (or *displaced* for that matter) animals, like experiencing bat-like echo-location via audio tunes or binoculars mimicking a bird of prey's immaculate visual senses and abilities (Bostock, 1993, p. 176).

And still, there are two more arguments against the self-acclaimed educational benefits of

zoos. First, the sheer quantity of animals displayed easily leads to an overkill in exposure in the visitor, expecting to be able to see everything in one visit. And second, what one sees at the zoo is nothing more than a wild animal's effigy that has lost most, if not all, of its wildness by definition because it is not wild anymore. Given that what one sets out to see is not to be seen[2], one can argue whether or not it might make more sense to replace zoos with natural history television programmes that "show the lives of wild animals in their natural habitat, not in small cages" (Garner, 2005, p. 141). Often times, this argument is countered along the lines of a living animal being better to use for education than "a dead one, and a dead one [better] than a book" (Bostock, 1993, p. 170).

With recent digital developments, high-definition cameras and slow-motion shots, however, natural history movie making has "provided a whole new dimension to our understanding of the natural world. The opportunity for us all to watch on television cheetahs or elephants or lemurs, in their natural habitats, in some ways makes zoos educationally less important than in the last century" (Bostock, 1993, p. 170). One could even go one more step further and say that "films, indeed widely available illustrated books, have removed the urge or need that people had a century ago to flock to zoos" (Bostock, 1993, p. 170). Still, when it comes to the experience of witnessing animals in real life, movies "offer something fine, but little to do with what for many zoo visitors – whether general public or schoolchildren – is the most valuable element of their visit", namely the feeling of proximity (Bostock, 1993, p. 174). This leaves us with the idea that what fascinates visitors is not learning about the animals, seeing how they behave, what threatens them and alike. They rather want to experience the thrill of coming close to a being that embodies the idea of wildness and stands for the exotic, a being we can usually not lay an eye on because it would naturally hide from us or live in foreign places. This, however, might have much more to do with entertainment than with education.

1.3.2 Recreation and Entertainment for the Public

The second of the four pillars, concerning the recreational character of the modern zoo, is most prominently found in the legislation of zoos. The "UK Zoo licencing act", a piece of

[2] as zoo animals cannot, by definition, be wild animals.

jurisdiction that went virtually unchanged in its core since 1981[3] and that can be found in many other countries with a near enough identical essence proclaims that: "A zoo is defined as any establishment where animals of wild species are exhibited to the public" (Zoos Branch Department for Environment, 2012). The idea of being a place to entertain the public is deeply rooted in the modern zoos self-understanding. Zoophilia, in the non-sexual form understood as the love for anything animally, is the main driver in making the visit to the zoo worthwhile for the public. Zoos use this main driver to draw people's attention and argue that they, at the same time, educate them. They claim to keep people in developed countries from disconnecting even more from their living environment, consciously or unconsciously. Helmut Pechlaner, the former director of Vienna's Schönbrunn zoo, for example, argues that by raising awareness, zoos want to create public pressure to protect and conserve natural habitats and, with them, the biodiversity they house. During a relaxing and eventful walk, the visiting public should experience their responsible position in these communities of life and destiny[4] (Pechlaner, 1993, p. 170).

In light of a vanishing nature, zoos try to work as an entertaining and amusing emergency exit to nature (Münch, 1998, p. 31). And even though the concept of nature that is presented at the zoo is an artificial one only mimicking real nature, it is still the closest the average city person, or person in any so-called Western country might ever get to animals considered wild.

As will become clearer in the chapter on ethical arguments beyond welfare, the zoo is and remains to be an ambivalent place to go to for recreational purposes, given that the paying of an entrance fee leads to the paying customers having expectations about what they want to see – and believe to be in the right to get – in return for their money. In fact, "zoos tend to meet most of their running costs from the entrance fees paid by visitors ('gate money')" (Hosey et

[3] The document has however been amended (to be more in favour of a modern institution) in 2002 to also account for the institutions other functions, namely "(i) research from which conservation benefits accrue to species of wild animals; and/or (ii) training in relevant conservation skills; and/or (iii) the exchange of information relating to the conservation of species of wild animals; and/or (iv) where appropriate, breeding of wild animals in captivity; and/or (v) where appropriate, the repopulation of an area with, or the reintroduction into the wild of, wild animals; (vi) promoting public education and awareness in relation to the conservation of biodiversity, in particular by providing information about the species of wild animals kept in the zoo and their natural habitats" (Department for Environment, Food and Rural Affairs, 2012).

[4] The term used is *Schicksalsgemeinschaft.*

al., 2013, p. 42). A placid example for the importance of gate money can be seen in the biggest continental European zoo, Zoo Berlin, where the entrance fees made up 68 % of the total revenue in 2018 (Zoologischer Garten Berlin AG, 2019).

With part of this money going to conserving species from ultimate extinction, one can argue that "there is no evidence that the public would give this money to conservation projects if zoos did not exist" (Hosey et al., 2013, p. 42). However, there also is not any evidence that they would not do so. From a utilitarian perspective[5] seeing the greater good, generating (some) money for conservation, even if the visitors mainly (or solely) come in for entertainment, might be a strong argument for justifying zoos.

In addition to this, an argument often brought forward to justify attracting the masses to visit modern zoos grounds on the idea that the public will only come to care about things they are familiar with and know. The conditions animals are kept under in zoos that Donnelley refers to as "semi-wild" are a mix of "simulated wild habitats and open spaces both for the sake of the individual animals and their social groups and for the ethological and ecological education and enjoyment of humans" (Donnelley, 1995, p. 27)[6]. One problem with this quasification (Beardsworth & Bryman 2001) is that it leads the visitors into thinking of the unnatural zoo habitat as being a natural or at least naturalistic representation of the inhabitant's natural habitat. But the artificial surroundings, the creation of an aesthetic of naturalness is clearly aimed – possibly even primarily aimed – at the human visitor, not the non-human inhabitant of the enclosure (Benz-Schwarzburg & Leitsberger, 2015, p. 21). A danger of this fact is pointed out by David Hancocks, former director of Seattle Zoo, who argues that "zoos are more interested in the illusion of making visitors think animals are well cared for than in actually helping them" (cited after Worland, 2017).

With regards to the recreational character of zoos as businesses zoo proponents argue that "in the service of environmental education, [the zoo] must function first and foremost as a business" and therefore meet the public's desires to some extend as well, exhibiting

[5] See 2.2.3.
[6] Note that this would be a utilitarian perspective.

“interesting material with which visitors want to interact” (Adams, 2013, p. 431). Because of this, zoos “must continuously improve upon, beautify, and maintain visually enticing exhibits in order to keep a continuous flow of customers“ (Adams, 2013, p. 431). In short, zoos need money to continue their existence. They need to attract the crowds, using fun experience and the charismatic megafauna to feed and boost their economic interests.

This also very much reflects in the image zoos give online. The elephant in the room is entertainment. Topics are called “‘attractions’, ‘encounters’, ‘what to do’, ‘feeding’, ‘visit the zoo’, ‘what’s on’, and ‘fun zoo’” as Carr and Cohen point out (Carr & Cohen, 2011, p. 181-182). But the term *entertainment* itself is cautiously circumvented in general. This might, in part, be done to distant the modern zoo from its former character. The trend of putting entertainment very much in the background runs parallel to the trend of putting the other pillars very much to the foreground, especially conservation.

So because of the fact that most zoos are in need of the fees paid by their visitors to at least some extend, the recreational aspect of a zoo, cannot be underestimated. If this fact were to be disregarded and the visitors interests overlooked, the lack of funding would probably indeed leave the institution ready to collapse. So with this in mind, “enclosure design represents a compromise between animal’s, keeper’s, public and manager’s interests as well as the architect’s abilities” (Benatar, 2018, p. 27).

It would be unfair and short-sighted though to argue that all changes in modern zoos are made for the visitors alone. Over the past decades, the animal’s enclosures have developed a lot with the inhabitants’ welfare in mind. This conflict between visitor’s interests and the animals’ quality of life is a great threat to this development. Yet still, “as a collection of living animals usually for public display” zoos are and always have been created at least to some degree with the simple pleasure and enjoyment of the public in mind (Ludwig, 1981, p. 315).

One way out of this would be granting zoos more governmental and financial support. It has been early argued that financial benefits other cultural institutions like museums and theatres receive, would lead to “a growing emphasis on support of efforts in science and conservation

as ends in themselves rather than the implied need to tie them in with amusement/recreation functions of zoos“ (Ludwig, 1981, p. 316).

From the discussion so far we can summarize that there is a picture of zoos that renders them indeed into ethically very problematic institutions. It is the picture of zoos as predominantly commercially run institutions or businesses of the entertainment industry that keep nonhuman animals behind bars and in lifelong captivity, overruling their potential rights and welfare for hardly other reasons than making money off them by displaying them to a paying stampede of human visitors. It remains to be investigated whether or to what extent this criticism is warranted with regard to today's zoos. This will largely depend on how the zoo deals with the other three pillars. We have already seen that education, how it is implemented in most zoos, is a rather week justification. Let's turn to research.

1.3.3 Scientific Research

The third important aspect of a modern zoo is the scientific research conducted within. According to Hediger, the founding father of the four-pillar-concept, this research includes measures from different aspects of zoology, botany, veterinary medicine, ethology, genetics, dietics, ecology, zoogeography, human psychology and everything that is of biological relevance to zoos (Hediger, 1942). The amalgamation of these fields is called "zoo biology". Zoo biology tries to offer a foundation for the best practice of keeping wild animals in captivity and explores and formulates the special scientific legitimacies for animals and humans resulting in this form of animal husbandry (Hosey et al., 2013).

As Nogge explains, the aspect of scientific research is as important to the institution zoo as it is to all the animals living there. The findings of this scientific research of both wild counterparts and captive zoo animals has tremendously improved the conditions of captivity for zoo animals (Nogge, 1998, p. 450).

Today, it seems plausible that husbandry conditions at least in some zoos "are natural enough to permit some interesting research possibilities" (Jamieson, 2006, p. 137). Nowadays, the

conditions enable zoos to conduct scientific research in various ways: “they fund field research by scientists not affiliated with zoos; they employ other scientists as members of zoo staffs; and they make otherwise inaccessible animals available for study” (Jamieson, 2006, p. 136). In order to enable such things, one can easily imagine that the zoo needed to change with regard to funding and management strategies, to visitor expectations, staff qualification, enclosure design, husbandry conditions, animal welfare and many other aspects and components.

An argument often brought forward is that in order to be able to care for and thus save species from ultimate extinction, scientific research conducted in zoos is needed. This scientific research it is claimed does not only improve the conditions of captivity for the animals kept[7] by increasing the understanding of the species’ needs, but also increases the quantity of general knowledge on entire species (see Fa et al., 2011). Naturally, this will only stand if those scientific findings are applicable to wild counterparts indeed.

Without a doubt though, the simple fact that the so-called wild animals studied lack their most prominent trait, their wilderness, should lead to a cautious view regarding the importance of research on captive zoo species. What is learned from these individuals is to be taken with a pinch of salt. The impact of their captivity on the animals’ behaviour means that animals in zoos are behaviour-wise little more than a shadow of their wild and free conspecific. More than two centuries ago already, French Naturalist Frédéric Cuvier understood when observing gerbils in the Paris menagerie that imprisoned animals under unnatural conditions in small enclosures make for poor research objects (Burkhardt, 2008, p. 126).

This also has to do with the ontological status of zoo animals. Paradoxically “zoo animals are not domesticated but are also not wild; they are not hybrids but they never fully embody their species” (Braverman, 2011, p. 823). These animals are, to a certain extend little more than “body doubles, stand-ins for the real animals, ambassadors for their conservation“ (Braverman, 2011, p. 823). From this perspective, being an “ambassador” for a threatened

[7] But even though the husbandry conditions of captivity in zoos have changed to a certain degree, the majority of changes in enclosure size and design have been made with the human visitor’s perspective and changing wishes in mind.

species becomes a quite problematic thing. Evidence for this comes from observations on the zoo animal's ethogram which differs from that of a truly wild animal leading to the consequence that those animals in captivity are on, perhaps even past, the brink of not being wild animals anymore at all (Nogge, 1998, p. 451, Hosey et al., 2013).

Of course this has a huge impact on these pseudo-wild individuals' conservation value and also lowers the strength of the research argument. If what is learned through research about those animals in captivity is not something generally applicable to the wild individuals of the same species there is a problem of transgression. What is learned about the animals in captivity says little, if anything at all about the wild animals, especially if the individuals studied have been in captivity for many generations as is the case for the great majority of zoo animals. These animals are living effigies of their wild counterparts, nothing less, but certainly nothing more either. In short, the claim that zoo animals "are more interesting research subjects than those in the wild is not very plausible" (Jamieson, 2006, p. 137). The interest in sound scientific research has to be bulletproof in order for zoos to be able to use it for legitimizing their right of existence by help of their scientific eligibility. If better alternatives exist (like studying wild animals in order to learn something about their natural behaviour) research in captivity becomes marginally important for scientific progress.

In addition to this, scientific research, at least in German zoos, appears to be the exception rather than the rule. The 71 zoos grouped together in the Verband der Zoologischen Gärten e.V.[8], amongst them the 56 leading German zoos publish together 236 scientific studies per year with the vast majority being final theses of external university students without any peer review (Verband der Zoologischen Gärten e.V., 2020). Still, these 71 zoos alone keep a staggering 183.000 animals in captivity and use the argument of them, being there as important research objects.

How diminutive the aspect of scientific research is in modern zoos becomes obvious also in the handling of this subject by these institutions. Hardly any zoos place "their future research

[8] "Verband der Zoologischen Gärten e.V." (VdZ) is the self-claimed leading association of scientifically managed zoological gardens in the German-speaking countries.

agenda on their websites, despite such a document arguably giving an image of forward thinking and professionalism, which could aid the public in recognizing the long-term commitment of zoos to conservation" (Carr & Cohen, 2011, p. 182).

1.3.4 Conservation

The fourth, and as I will expand on later, most important of the pillars is the one of species conservation. Most important is this pillar thereby from two perspectives. It is clearly the pillar zoos themselves stress most in their PR strategies. But it is also from an ethical perspective something they should indeed strive for.

Conserving *in situ* and *ex situ*[9] has increasingly become "the central mission" of the modern zoo (see Braverman, 2012, p. 130; similarly, e.g. Worland, 2017; Hosey et al., 2013; Beardsworth & Bryman, 2001, Carr & Cohen, 2011). Practically and essentially, conservation in zoos means that "captive animals are assigned committees and plans that further their intense management on a regional, at times even a global, scale" (Braverman, 2012, p. 130). Some scholars have referred to conservation as the main argument for the legitimisation of zoos as their "master narrative" (see Beardsworth & Bryman, 2001, p. 94 and Benz-Schwarzburg & Leitsberger, 2015, p. 20) or the "*raison d'être* for their institutional survival" (Braverman, 2012, p. 130).

When discussing this fourth pillar it is of course crucial to look at what conservation does and does not mean. The definition I will work with is the one used by the WAZA being the biggest and most important player in the zoo-world. The WAZA defines conservation as "securing populations of species in natural habitats for the long term" (World Association of Zoos and Aquariums, 2015, p. 12). Although the two terms are used interchangeably by many authors, "'conservation' contrasts with 'preservation', which suggests keeping something in mere existence, like a fly in amber, rather than as something still usable, or developing, or alive" (Bostock, 1993, p. 127).

[9] *In-situ* and *ex-situ* refer to the conservation efforts within the species original habitat and outside of the original habitat respectively.

For what can be called the leading zoos and institutions representing them, “conservation - the work of protecting endangered species is at the top of their list” (Worland, 2017). This also becomes clear with their wish to influence members “to spend at least 3% of their budgets on field conservation efforts”, a call made for example by the Association of Zoos and Aquaria (AZA), the North American equivalent to the EAZA (Worland, 2017). Similar figures appear to hold true for the European zoos represented by the European Association of Zoos and Aquaria (EAZA), that contributed 16 million Euros to conservation in 2018 (European Association of Zoos and Aquaria, 2019, p. 37). Noteworthy, this is 40.3 % less than the same institutions spent in the year before (26,8 million Euros in 2017) (European Association of Zoos and Aquaria, 2018, p. 35). According to the EAZA, contribution can be defined as “1. Donating time, personnel, monies, knowledge or materials to invest in a specific cause. 2. Providing resources to a third party to invest in a specific cause” (EAZA, 2015).

For some time now, zoos have been “striving to become effective centres for conservation” that are “committed to sustainability and want to be seen as organizations that can take a lead in demonstrating sound environmental management” (Hosey et al., 2013, p. 536). In the case of species that could only be reintroduced back to their natural habitat because of their conservation in zoos, these efforts are important in terms of showcasing what can be done. So despite perhaps only having a small impact in light of all the species vanishing from the surface of the Earth, those species saved (for example the European bison or addax antelope) are, from the perspective of zoos, indispensable examples for highlighting the success of conservation endeavours (Münch, 1998, p. 32).

These efforts in species conservation also had an influence on how wild species were seen by zoos as Peter Karsten, former director of the Calgary Zoo and president of the Canadian, the American and the World Association of Zoos & Aquariums points out in an interview: “Within a decade the entire concept of zoos changed. ‘We realized we had to disown the animals […] We had to eliminate their monetary value. They have to be owned by the world. We are their custodians” (Di Cintio, 2010). As a first step, “zoos reduced their collections. Regulations were drawn that forbade the sale of endangered animals and restricted their transport across international borders” (Di Cintio, 2010). The most influential legislation with

regards to wildlife conservation is the “adoption of the Convention on International Trade in Endangered Species (CITES) of 1973“ (Kisling, 2001, p. 173). This treaty regulated the trade of endangered species worldwide and simultaneously protected these species in the wild. From 1973 on, the wild could no longer be violated as an almost endless supply source for future zoo animals. Over night, zoos needed to sustain their own populations outside of the wild ones to allow for continuous exhibition. Breeding them became a preservation tool for the institution itself.

A lack of clarity in numbers adds to the obscure ways zoos set out to conserve wildlife. As Carr and Cohen state with reference to the results of their research into the public face of zoos “none of the zoos studied published the success rates of their breeding programs on their websites” (Carr & Cohen, 2011, p. 182). But still, zoos around the world claim to be wildlife conservation centres in light of the fact that “international regulations regarding the capture, sale, and transport of many species have pushed zoological gardens to become significantly more publicly popular of these efforts to maintain captive stock” (Rothfels, 2002, p. 205). Clearly, the ‘species survival programs’ through which zoos cooperate in breeding endangered species give the institutions more credit (Rothfels, 2002, p. 205). In theory, the “results of these programs reap a double benefit for the zoos: more rare animals for the collections, and more press about how zoos are working toward the conversation of species, biodiversity, and other laudable goals” (Rothfels, 2002, p. 205). The reality however looks quite different.

In reality, most successful breeding and conservation endeavours worldwide, some of which will be discussed in the next chapters, are run in special facilities that have been planned, set up, and “located in remote places, far from the attention of zoo-goers” (Jamieson, 2006, p. 140). In order to support effective wildlife conservation the argument of critics is that one “should support such large-scale breeding centres rather than conventional zoos, most of which have neither the staff nor the facilities to run successful breeding programmes” (Jamieson, 2006, p. 140).

Zoos, the counter-argument goes, do neither accomplish conservation (e.g. by breeding and re-introduction to the wild), nor do they bring across the importance of conservation to the public. As the WAZA claims, conservation education has a "central role for all zoos and aquariums" as a "critical component of field conservation, building awareness and support" (Olney, 2005, p. 35). The rising of awareness in the public is a crucial point in ensuring successful conservation endeavours and one of the strongest arguments for the legitimisation of zoos. In this sense, the conservation work of a zoo is only as good as its education work is.

But even considering these facts, and presupposing that, from an ethical point of view, the aspect of conservation is a valid legitimisation for keeping animals in zoos (as I will show later on), one thing has to be made clear. At the present moment, conservation of animals in zoos is little more than conservation of zoos as institutions. And it will remain to be a fig leaf, as long as the effort of saving wild spaces, that is natural habitats of threatened species, rather than only trying to save wild species, is not put on the agenda with the same emphasis. Even from an anthropocentric perspective, not the breeding of animals in captivity but the conservation of natural and primal habitats should be the primary and overriding goal of wildlife conservation. Otherwise we will run out of protected areas of reintroduction for any (zoo-)bred animals. In this sense we can say that species conservation as an isolated topic, reduced to the message "in the enclosure here you can see a threatened species that needs to be conserved" is misguided. It reduces a very complex issue to the level of species, represented by individual animals, instead of making us aware of a broader perspective, that includes networks of extinction, habitat loss and, ultimately, human responsibility.

1.4 Interim Conclusion and Hypothesis

Despite several changes, the zoo has only come so far until now. I will therefore draw my interim conclusion from these observations and introduce my hypothesis, that is: at its core, the zoo is an institution with the human visitors' interests at heart, not the non-human inhabitants'.

As I have shown on the previous pages, the concept of the zoo has both changed considerably (e.g. with regard to the promoted goal of conservation) but also remained relatively unaltered over the past generations, still serving what some perceive as the institution's true main cause:

the public display of what is considered by the uninformed visitor to be wild animals. In the following I will set out to argue that although the introduced four main narratives for the continuing existence of zoos have been formed and honed, none but the one of conservation sets the concept of a zoo on ethically stable ground, leaving research and education on the perimeter when in turn working towards conservation.

Whilst a lot has been written about the four different pillars and their role in former and present zoos much less has been written about the way the zoo should look like in the future. Therefore, after my discussion of the conservation purpose I will specifically focus on the arguments in favour of modernising the zoo and turning it into an institution more in tune with the ethical side of keeping wild animals in captivity, especially for the sake of species conservation.

The hypothesis of this thesis which I aim to clarify by means of my analysis is that the institution of the zoo, and therefore its character and fundamental nature were designed and indeed still are run with the human visitors' interests in mind. And albeit some things have changed for the better with regards to living conditions or living experiences for the non-human inhabitants, the so called "postmodern zoo" is, at its core, the old "modern zoo" it was revamped into by Hagenbeck over a century ago. But it is, and without a radical change it will remain to be, an institution designed for mankind rather than for the animals kept within.

To me this became very obvious during the spring 2020 lockdown. During this time of caution when zoos tried to keep the Covid-19 pandemic at bay, I came to walk through the Berlin zoo whilst it was closed to the public. The effect of seeing individuals of idle exotic species at haphazard within a European capital without someone there to watch them felt very strange. The set up staged here was substantially incomplete, the interaction the animals were put into cages for could not take place: the missing human became visible as an absent referent, one that is indeed the main protagonist. Without him the zoo does not make sense, I felt. The scandal in this is of course, that the argument of the animals being there for show might not be good enough an ethical argument for their captivity.

With an ever-changing relationship of human and non-human animals, change for the zoo is inevitable. If the zoo of the future is to flourish and thrive amidst the wind of change blowing from more than an animal rights elite, it will have to be re-thought and re-designed, or has to re-think and re-design itself to stand the test of time. The zoo will have to change from an institution designed for man, for the human visitors enjoyment and recreation, into an institution with the animals at heart. It will have to focus on the animals' well-being, interests, and survival. This drastic 180 degrees turn is the only way the institution can retain, or obtain the credibility it was pampered with in the past.

I will map out how this blatant change should be ethically conceptualized in the next chapters with reference to the findings of my analysis concerning the value of conservation. I will address the subject of an ethically sound form of wildlife conservation and the role zoos could and should play in it by addressing three major lines of ethical arguments: welfare ethics, conservation ethics and ethical arguments beyond the scope of welfare and conservation. I will thus leave the structuring of the debate according to the four pillars of zoos behind for a moment, but ultimately the four legitimizing narratives will turn up and they will be scrutinized by re-discovering and re-discussing them within the three ethical arguments.

2 Main Part – The Zoo Ethics Critique

With the first chapter having been a critical introduction to the post-modern zoo's present state, drawing a picture of the status quo, the aims and aspirations of zoos, this second chapter will look at the theory behind the needed changes. Three lines of arguments of the ethical zoo critique will be brought forward: animal welfare-oriented arguments focussing on an individual's quality of life, conservation-oriented arguments focussing on the survival of an entire species, and ethical arguments beyond welfare and conservation. This third set of arguments captures a broader range of ethical concerns with keeping wild animals in captivity and all the rights and duties surrounding this topic. After the initial introduction, each of these arguments will be critically analysed, discussed and contextualised, before the three lines of arguments will be brought back together and applied to the zoo of the future.

The welfare critique brings forward a range of widely accepted arguments and problems regarding the welfare of captive animals. As an ethical demand animal welfare in zoos and similar institutions is widely recognised by both people in favour of zoos as well as those who are strictly against them. The argument for conservation is less explored thus far. While I will show for this argument as well that it is ethically laden, and indeed an ethically relevant one in the zoo debate, I will also discuss the challenges we face when moving from the level of the individual animal and the individual's welfare to the level of species conservation (here, we have to ask, for example, whether or not individual rights of freedom and self-fulfilment should override those of a species' survival or not). The third group of arguments which I will discuss summarises criticism that goes beyond both levels, that of animal welfare and that of species conservation. A range of scholars have put forward such arguments lately with the aim to address problems which might be less obvious to the zoo visitor because they turn the focus away from a direct consideration of the individual and species and more on zoo design and marketing (which again, as I will argue, indirectly impacts how zoo animals, their interests and needs are perceived by the visitors). These arguments are also important because they bring in the level of the human-animal relationship as a level where zoos have a huge impact on. And finally, they deliberately point at future trends that current zoos might follow (like the trend of "disneyisation", leading to a range of changes in zoos that ultimately render them more than ever into places of entertainment, rather than conservation and education (Benz-Schwarzburg & Leitsberger, 2015)).

As what we learn from the past of the zoo may very well help us steer towards its future, in the last parts of the thesis, I will interpret the aforementioned strains of arguments in light of

their implications for an ethically more defensible future of zoos. Possible trends, like an upsurge of virtual reality based zoos or having a gene-databank instead of living individuals, will be used as case examples to discuss how solving problems from one strain of arguments (like the welfare strain) might still not solve the challenges addressed by the other two strains. By taking several philosophical positions into account I will come back to the discussion of potential rights of individual non-human animals versus potential rights of a species but now with a focus on mapping out possible human duties that could result. In doing so, I will try to map out an institution accommodating not only the non-human animals' rights, but our very own moral duties towards them as well giving clear advice on how to be ethically more permissible.

By recognising and scrutinising possible shortcomings and pitfalls again on all three levels of argumentation, I will derive my conclusions on how the zoo of the future should look like from an ethical perspective. My major interest thereby lies in how to achieve a radical change away from the zoo's character as an institution that mainly complies with the needs of human visitors towards an institution that mainly focuses on the perspective of the non-human animals and the human-animal relationship. I will hold on to zoos as institutions that still exist in the future. However, my positive outlook here exclusively applies to zoos that implement the kinds of changes, which I have in mind on an animal welfare level, a conservation level as well as an ethical level beyond those norms.

2.1 Learnings for the Zoo

Here, I will summarise what the zoo can learn from the zoo ethics debate. If the change from the 17th century menagerie to the 21st century postmodern zoos is a mainly aesthetic and cosmetic one, this is a shortcoming the zoo of the future should learn from.

Albeit having improved greatly in terms of medical care, nutritional changes, and breeding successes, these allegedly animal-friendly and positive changes simply reflect changes in societal progress rather than a consequence of a self-determined evolution. And without radical changes, even institutions like the WAZA might just be leading zoos into a dead-end by not appearing to be willing to re-invent the institution they represent.

With regards to the two questions whether we really need zoos and whether they are ethically acceptable, Colin Tudge, British zoologist and science writer, urgently answered that “if we define ‘zoo’ narrowly, as a collection of animals in cages with bars, then the answer to that grand question is ‘no’” (Tudge, 1991, p. 243). With a more and more sophisticated approach to its own work and calling however, an institution he defines “as a place where animals live in a protected state, and are made accessible to human observation” zoos become “self-justifying”. Tudge argues that “If zoos did not exist, then any sensible conservation policy would lead inevitably to their creation” (Tudge, 1991, p. 243). This claim only works, however, if everything within the zoo is aiming at wildlife conservation and the raising of awareness in the zoo-going public of this topic.

Interestingly enough this idea is not new. Many decades ago already, Gerald Durrell, who dedicated his life to the conservation of wildlife and who’s legacy still lingers in his trust’s mission of rewilding our world, stated that “the purpose of keeping any collection of wild animals in confinement should be threefold; first, to conduct as complete as possible a biological study of every species” which would be more accesible and less costly than similar studies in the field, aiming at the conservation of the species in the wild (Durrell, 1976, p. 108). Also, “to aid severely endangered species by setting up, under ideal conditions, protected breeding groups” that will form the basis for reintroduction and “by the display and explanation of this work to the public, to persuade people of the vital necessity and urgency for the overall conservation of nature” (Durrell, 1976, p. 108).

This raises the question how zoos can accomplish this, how they can in general deal with the criticism they face and what they can learn from it. In the process of turning into an institution mirroring ethical ideas, “critics of zoos (they include many of course who work in them!) should be listened to, and their criticisms complied with where they cannot be shown to be mistaken” (Bostock, 1993, p. 194). Even hard-core zoo enthusiasts like the former director of Vienna’s zoo agreed to this acknowledging that wherever zoo critics have sound knowledge of zoos and ability to pinpoint drawbacks, they have to be welcomed to and by the zoos (Pechlaner, 1993, p. 169).

We clearly have to have a closer look on the ethical arguments and tensions in the zoo critique (which is what we will do in this main part of this thesis) and learn from them what the zoo of the future should look like with regards to the main purpose and goal of the institution (which is what I will discuss). But there are some, I think, obvious learnings that we can already detect from the introduced ideas. Some of them are actually quite hands-on in the sense that zoos could and should implement them as changes rather sooner than later.

One of those changes concerns the very inhabitants of the zoo. There is the dilemma of choosing between the charismatic megafauna, those sexy box office animals that draw in the public and create revenue and those small little brown jobs that might be less interesting to the public to look at but who are of great importance in terms of conservation (Mackay, 2009, p. 94). Displaying only those animals the public craves for is of course not in line with conservation and much more in tune with today's endeavours to offer something for entertainment which leads to zoos that are notoriously overstocked in mammalian species but chronically underrepresent (threatened) amphibians and invertebrates (Rose et al., 2019). This also holds true in their research, where "mammals are consistently the primary research focus" (Rose et al., 2019, p. 128). In terms of conservation, however, it could also make some kind of sense not to rid oneself of those big and charismatic animals straight away as they do work as flagship species, that is an animal beguiling the public and therefore potentially raising awareness of and support for *in-situ* conservation efforts that in turn benefit many more species (Hosey et al., 2013, p. 348). This question needs to be solved by an analysis into the moral status of animals and whether it is permissible to instrumentalise some of them for the gains of others. It also needs a careful check of the actual conservation education impact such flagship species have in terms of impacting actual visitor behaviour. Zoos should move towards exhibiting actually threatened animals no matter whether they are attractive or not. The percentage of attractive but not really threatened species over actually threatened ones needs to be assessed and changed accordingly, no matter whether the latter are attractive or not. Rather than being like a walk-in encyclopaedia with a vast assortment of different species displayed to the goggling public, at least when it comes to the big vertebrates, there will have to be more self-restraint from the zoos' side (Pechlaner, 1993, p. 170).

One consequence of this is the changing face of zoos. Those "classic zoo animals" that might even look indispensable at present should not be considered "classics" any longer and should only be kept under state-of-the-art aspects of animal husbandry (Pechlaner, 1993, p. 171). This state-of-the-art husbandry encompasses the understanding that there actually are no zoos that are too small in size, but only those that either have too many animals in their collections or enclosures that are too small. If these zoos were to cut down on the numbers of animals, then even small zoos would be able to offer close to optimal housing conditions for all their animals, even supporters say (Pechlaner, 1993, p. 172). Zoos will have to change; the question is to what extent.

Bostock points out that "institutions, which of course include zoos, themselves tend to evolve, and we are much more likely to arrive at a fully satisfactory zoo by improving a less satisfactory one than by trying to start a fully satisfactory zoo from scratch" (Bostock, 1993, p. 195). While one might disagree here, it seems that if we start from the zoos we have, they need to evolve dramatically. Touching on this topic, Pechlaner rightfully acknowledges that the changes the zoo has to face have to be greater than those from menagerie to the Hagenbeck's outdoor enclosures (Pechlaner, 1993, p. 176).

Of course, in times when natural habitats are gone or degraded, zoos can offer something to their inhabitants: Bostock argues that "clearly zoo animals (and this will apply even where they have little relationship with their keepers or anyone else) at least have medical and other protection, which is a substantial advantage of their state, even though they require even more zoo conditions which fulfil their needs, especially that of meaningful occupation" (Bostock, 1993, p. 185). Zoos are increasingly recognising the task to care for "meaningful occupation" as exemplified by the increasing interest and implementation of enrichment measurements. And this change is already being called for as well as implemented, at least by parts of the zoo world, as I will point out more in the welfare debate. Jon Coe, renowned zoo designer proposed a new set of five freedoms to extend the five old ones[10] by adding five new freedoms to the list. These new five freedoms are the freedom to "achieve competence

[10] Being the freedom from: 1) hunger and thirst, 2) discomfort, 3) pain, injury or distress, 4) fear and distress, 5) to express normal behaviour, see footnote 12.

(effective performance of normal functions), have choice (the right or ability to choose), take control (the power to influence the course of events), experience variety (the quality of being different or diverse; the absence of uniformity or monotony), [and to] engage complexity (the quality of being intricate or complex)" (Coe, 2017).

These freedoms, Coe argues should inspire zoo design, with (yet another glance back at Hediger) nature being indeed the model for a suitable environment in captivity. The fundamentals of this new zoo architecture and design should copy nature (not other zoos), be biomorphic (look and function are 'natural') or naturalistic (artificial appearance but still natural function), and contain soft elements (plantings, mulch, logs, etc.), rather than just hard ones (tile, concrete, steel, glass, etc.) (Coe, 2017).

To sum it up, it might be that zoos should take advice from another field of human-animal-interaction that is experiencing drastic changes; that of animal testing, and should learn from and implement the well-known mantra of the three Rs: reduce, refine, and replace. They could reduce their animal collections by specialsing on few, threatened species a given zoo is a real expert on. They could refine the husbandry conditions as well as their conservation and education efforts. And finally they could also replace living animals by other (non-living) attractions. Brando and Gjerris have recently also suggested to use the 3 Rs as an analysis prism to ethically assess zoos. They argue that "there are similarities between motivations for housing animals in zoos and using them in research that are ethically relevant to consider" (Brando & Gjerris, 2022). The authors furthermore suggest "that the zoo community has committed to progress towards evidence-based best practice models to ensure and enhance the welfare of animals housed in zoos" and propose that "there is a growing public concern regarding the welfare of zoo animals which can, to some extent, be met by viewing current practices through the prism of the 3Rs" (Brando & Gjerris, 2022). An idea I will discuss later.

Another thought worth voicing is the idea of whether there should perhaps be an authority of higher status in state here, which would regulate the equipment of zoos with animals and regulate and curate their keeping in a way stronger than those breeding programmes in action now do. Because at present, "the project of animal governance was usually executed within

the particular zoo institutions, with little or no need for broader institutional communications“ (Braverman, 2011, p. 126).

Finally, changes should also come upon the humans at the zoo. The two big Parisian zoos, the Ménagerie du Jardin des Plantes as well as the Parc zoologique de Paris for example belong to the museum of natural history and are also run by its director. Interestingly, the close proximity of zoos and museums concerning their main characteristic of being places where dead or living animals are displayed and made available to the gaze of human visitors, a characteristic that points us to problematic ethical dimensions beyond conservation and welfare, also puts education in the spotlight. After all, according to zoos, education of the public is at the very core and it will remain to be so, even if zoos might increasingly turn away from keeping the most of the charismatic megafauna in their inner-city compounds. They will have to find out how to educate people and draw their attention for conservation also in case of less attractive but highly threatened species. Thus, the importance of successful education in the modern zoo, the way it should function in the future cannot be overemphasised and needs addressing. And this education should also entail pointing out the difficult terrain an institution is treading on that keeps animals in captivity. As Ludwig argues, “it might be that zoos could be most successful in carrying out their educational mission if they focused on the problem itself, if people were made aware of what the problem of captivity entails” and explain how “in terms of wildlife management as civilization impinges more and more upon the diminishing natural areas of the world“ (Ludwig, 1981, p. 316).

At the moment, we face a gap between the image of zoos created by the zoos themselves and the reality what zoos do and how they are. This gap is important, firstly, because “it is the image of zoos, not the reality of what they do, that is vital if the public are to be convinced of the need for the continued existence and support of zoos, especially in an era of increased concern about animal rights” (Carr & Cohen, 2011, p. 186). This means from a pragmatic perspective that zoos will probably continue to exist because they are very good in selling themselves along the lines of their master narrative, that is as conservation organisations. Secondly, the gap is important because it means that zoos need to close it: “it is the responsibility of these institutions to rectify this situation” (ibid., p. 186).

And whilst this scenario does sound like a Sisyphean task, I do believe that the zoo has the set of tools needed to be or become the main driver and institution for wildlife conservation. And even if they do not address all aspects of the zoo of the future yet, they already serve as "a time machine buying continuance for faltering wildlife populations" and what is more, "humanity's primary introduction to wildlife, promoter of environmental literacy and recruiting centre for conservationists" (Conway, 2000, p. 10). But the next step and one of the greatest challenges for their future is that zoos "have to become proactive wildlife conservation care-givers and intellectual resources" that "sustain animals which have lost their habitats and conduct campaigns to restore them" (Conway, 2000, p. 11). Zoos, that is my firm conviction, do not have to disappear, but they have to change dramatically.

At present, however, and even at their best, zoos "can be acceptable places for animals to live for generation after generation. If an animal lives as a member of a social group that is proper for its species, feeds from natural vegetation, finds its own mates and rears its own offspring, it does not seem to matter over much if it is also protected from predators, or is amenable to human observation. Even the best zoos, though, should be and should be seen to be only a part of a spectrum that extends from the intensive centre to the wilderness. They are not the sole end point of conservational endeavour, but for the foreseeable future they must be seen as part of the endeavour" (Tudge, 1991, p. 256). And in the distant future, it might even be that "if all goes well, the importance of zoos will diminish. For the present, their significance must grow […]. When they rise to this challenge, they become exciting. Any lesser perception, or lesser endeavour, is a trivialisation" (Tudge, 1991, p. 256). And it is this excitement I will expand on in the next parts of this thesis.

2.2 A Theoretical Backdrop

Before going into detail about the arguments mentioned in the introduction, a contextualisation of the theoretical implications and ethical orientation is needed. The following pages will map out the theoretical backdrop of the arguments proposed.

When discussing the zoo and its inhabitants in the context of ethics, it is important to consider several different aspects of the animals' moral status and its impact upon their potential rights

in order to gauge if overpowering their rights might be morally permissible or not. In light of the zoos immanent character of captivity, the most pressing topic is freedom and its value. With regards to species conservation, at least a utilitarian approach appears to make allowances for some degree of cuts to the zoo animals' freedoms as I will point out.

2.2.1 The Idea of a Moral Status

In a first assessment, the moral status lines out who counts morally, drawing a line between in- and out-group. The moral weight, in a next step, indicates how much they count and can be anything from egalitarian to hierarchical. The third step, the implementation then gives us an idea of how we should treat another subject. The assessment of the moral status of zoo animals is to try to answer the question of whether or not we should take them into moral consideration in the first place and, if we do, how much they count compared to us (Petrus, 2015, p. 251).

From the moral status follow duties towards other subjects that we are obliged to take into moral consideration. These duties can be indirect duties towards the animals, which might be the duty not to harm them because of them being someone's property, and direct duties, which stand in contrast to the former, as they arise towards the animals themselves, acknowledging their own and independent, intrinsic value (Petrus, 2015, p.251). Note, that the animals' potential intrinsic value is being conceptualised independently from species membership but attached to each individual as the individual she is.

As history proves time and time again, the human-animal-relationships is one of control and domination and exploitation from the former over the latter. As Donaldson and Kymlicka put it, the goal of any engagement towards the oppressed group with regards to the relationship has to be to end the oppression and utilisation of animals to human ends (Donaldson & Kymlicka, 2015, p. 330). Another advocate of this *a priori* flaw in the relationship is Tom Regan who argues that "the fundamental wrong is the system that allows us to see animals as our resources" (Regan, 2004, p. 14). What he means by that is that we tend to treat animals as our resources without any rights or perspectives of their own.

Regan follows an animal rights account. He points out that “some non-human animals resemble humans in morally relevant ways” (Regan, 2004, p.15). For him, they are so called “subjects of a life” who have the right to respectful treatment and have, *a priori*, inherent value. As these moral entities, some animals have beliefs and desires, perception, a memory of their own past allowing for a sense of the future, including their own. They have an emotional life together with feelings of pleasure and pain, a psychological entity over time, preferences and welfare interests (see Regan, 2004, p. 153).

Another important animal ethicist is Peter Singer. In a utilitarian approach focussing on equality and sentience he wants to take all those into consideration who are able to feel pleasure and pain and are thus able to suffer (Singer, 1999). Singer, too, sees animals as diachronic entities whose own perception of the world matters, as Regan does, giving leeway to the benefit of the doubt. In a way, the absence of evidence for some of the capabilities listed above is not to be seen as evidence for their absence. The important issue here is that both philosophers see the animal, at least the sentient animal, as “a conscious creature, having an individual welfare” (Regan, 2004, p.22). With this in mind, the take is that “all who have inherent value have it equally”, no matter which species they belong to (Regan, 2004, p. 28). The difference, however, between a utilitarian approach weighing preferences and interests of all affected beings and a rights approach is, that the latter assumes there are basic rights we are not entitled to violate (like a right to life, to freedom, and a right not to be tortured). Animal rights advocates ask for those rights for animals, too, and this includes zoo animals.

2.2.2 The Freedom-Gate-Discussion

The most obvious ethical aspect concerning the zoo is that of the negated freedom of its inhabitants. As I will show, this can be considered critical in regard to the animals’ welfare. There needs to be a distinction between two different elements of freedom for zoo animals: Firstly, the concept of freedom as an intrinsic good that is valued for its own and inherent sake, and secondly, the concept of freedom as an instrumental good with a value coming from everything else it allows and is a fundamental starting point of.

Good zoos, those that are "scientifically oriented and are continuously trying to improve their practices, their exhibits, their relevance to conservation, and their effectiveness in education and inspired public engagement for wildlife" (Safina, 2018, p. 6), should try to ensure the goal that their inhabitants' lives "are as rich and meaningful to them as possible" (Jones, 2014, p. 93). A rich and meaningful life, according to some scholars, should then include three different components: "feeling well, functioning well, and living natural lives" (Browning and Veit, 2021, p.3). The feeling well is a subjective notion of animal welfare that consists of "a subjective experience of life by an animal" with all its effects (Browning and Veit, 2021, p.3). The living natural lives is a teleological concept, with the presumption of animals having a *telos*, "that arises from their evolved capacities and capabilities" and is "essential to enable their flourishing" (Browning and Veit, 2021, p.3, with reference to Rollin, 2006 and Nussbaum, 2004). Another presumption, with a notion of living natural lives is the presumption, that "naturalness itself is good for animals that expressing the natural behaviour is essential to good welfare" (Browning and Veit, 2021, p.3). The most natural life for wild animals, and therefore their most meaningful life, is one lived in freedom. Scientific research suggests that, animals "enjoy the performance of natural behaviours and may very well feel frustrated or distressed when prevented from performing them" which gives "a purely instrumental, rather than intrinsic, sense of how natural freedom matters" (Browning and Veit, 2021, p.3).

Freedom, defined as "the absence of external constraints on movement", at the zoo, is easily contrasted against the zoos fundamental character trait; captivity (DeGrazia, 2011, p. 738). The most obvious way in which zoos, by definition, clash with the concept of freedom "is in the restriction of space" (Browning and Veit, 2021, p. 5). I will go into detail about this later on, but "while zoo enclosures may not be as large as wild ranges, this need not entail a loss of freedom" in general (Browning and Veit, 2021, p. 5). However, given the importance of freedom for welfare and given that respecting welfare is core to utilitarian ethics, freedom gains core standing as well. Still, its conceptualisation is one as instrumental good to welfare. When following this conceptualisation of freedom we should keep in mind that other ethical theories might see freedom as an intrinsic good. Any instrumental understanding of freedom contrasts with that and might leave us with a certain amount of discomfort, certainly with a

responsibility to constantly re-evaluate our instrumental notion with reference to standards as high as possible.

Freedom can be meaningful because it means freedom of choice. Studies on choice and control suggest that the ability to have some amount of control over their own environment is indeed important to animals. The animals appear to seize every opportunity they are provided with to gain control over the environment they are in, no matter of the resulting condition. Monkeys, for example, that "are given access to a switch that can change the light level in their enclosure" will use the switch, "regardless of the light condition", dimming the light if it is on full power, or lightening it up when it is dimmed (Browning and Veit, 2021, p. 8). A similar effect on the willingness to adapt their outer world was found in rats and mice (see Moon & Lodahl, 1956, Robinson, 1961, Kish & Barnes, 1961). Interestingly enough, there also is evidence for contra-freeloading, the idea that animals prefer to work for their food even though they could have it for free, too (Inglis, Forkman, & Lazarus, 1997). I will go into more detail about the consequence of this effect at a later stage.

The fact that at least some animals appear to want to have control over their environment and appear to want to work for their food does, however, not necessarily give us an idea of whether a restraint is morally permissible or not. Even in the wild, one might argue, is an animal's ability to freely satisfy its preferences "dictated by its habitat and the availability of those preferences" (Gray, 2017, p. 107). Therefore, one has to keep in mind that oftentimes, animals are thwarted from fulfilling their desires and preferences by circumstance (e.g. absence of preferred food, death of mate).

One preference bordering freedom is the preference for privacy in the sense of having the freedom to draw back and isolate from others, something that is difficult at the zoo. Because it is useful for their survival, animals of many species "appear to have a strong preference for remaining hidden, and captivity can upset this by reducing the ability to hide from humans and other species" (Browning and Veit, 2021, p. 12). Even more unsettling, "feeling like they are watched can thus be a source of distress for some animals" and therefore another welfare impairment (Browning and Veit, 2021, p. 12).

Captivity, often times, is considered wrong by default. As Browning and Veit point out, we may disagree with a condition, such as captivity in zoos simply “because it sits wrongly within our preferred ethical framework, but we cannot infer from this that there is a welfare problem” (Browning and Veit, 2021, p. 16). Hard science is needed to provide evidence for such a gut feeling to be true. As they rightfully note, “just because we do not like something does not automatically mean it is bad for that species, and it is something we can only establish through study, not our own assumption” (Browning and Veit, 2021, p. 16). In this same light, it is debatable “whether wild animals experience greater wellbeing than captive animals”, it is “a subject to debate that will always be susceptible to the imposition of human values” (Maple, McManamon, & Stevens, 1995, p. 225). I think it is an important and valid starting point for a zoo ethical discussion to look at freedom from a subjective, welfare-oriented perspective as Browning and Veit (2021) do. I will thus follow such an account. Still, perspectives beyond welfare should not be forgotten. They can still inform our approach to zoos as well as captivity itself, once we have dealt with the welfare question.

2.2.3 The Utilitarian View

I want to look at the zoo and its potential ethical legitimisation from a utilitarian perspective. Utilitarianism is a prototype of consequentialist ethics that considers the rightness of an action by looking at the quality of all its foreseeable consequences as well as those resulting consequences unforeseeable or unintentional (Birnbacher, 2015, p. 399). Philosophers like Jeremy Bentham used this recipe to measure pleasure and pain and weigh them up against one another to determine whether an action – with all its outcomes – was morally right or wrong. Bentham’s idea (Bentham 1967, see also Crimmins 2021) in "A Fragment on Government" and in his "Introduction to the Principles of Morals and Legislation" (printed 1780, published 1789) was the principle of utility or the greatest happiness principle, striving for the greatest happiness for the greatest number of moral patients. John Stuart Mill developed the idea further when stating in his work "Utilitarianism" (1861) “that actions are right in the proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness” with happiness referring to the “intended pleasure, and the absence of pain; by unhappiness, pain, and the privation of pleasure” (Mill, 2002, p. 239). Later, 20th century

animal ethicist Singer added the concept of the fulfilment of wishes and desires to this concept, making him a preference utilitarian. All of these philosophers took into account the capacity for suffering, with Bentham stating that the question whether (and to what extent) animals suffer is indeed the core question in animal ethics

Two key aspects are of interest in this notion. Firstly, there is the aspect of equality stating that every interest counts as much as any other. And secondly, the idea of utility seems interestingly the pragmatic choice of what brings the best balance between satisfaction and frustration of all involved, with options being weight against each other.

This ability of suffering and the idea of taking all suffering into account, no matter whose suffering it is, makes utilitarianism a pathocentric account with the principle of equality of interests at heart. Same interests mean same moral considerations and treatments, independent of species membership. With this in mind, an infliction of pain or suffering to a non-human animal is just as wrong morally as is the infliction of pain or suffering to a human. The only other measure is the ability to experience the pain that gives way to different weights of consideration. A consequence of this idea of weighing up all consequences of an action is that even negative consequences to few can be weighted up by a greater positive consequence of an action.

Bringing it back together to the three-level-approach introduced above, we can look at Singer and determine his interpretation of preference utilitarianism and its use for the ethical consideration of the zoo. To start with, the question on the moral status can be answered by saying that Singer is a sentientist, which is saying that suffering needs to be taken into consideration regardless whose suffering it is. As a plethora of beings appear to be capable of suffering, their suffering has to be evaluated and taken into account, be it based on their behaviour, anatomy, physiology or evolution.

The second question for Singer, the one concerning the moral weight, can be answered with him being an egalitarian, demanding equal treatment and equal consideration. If there should be a difference, however, a different treatment is not only acceptable but also demanded. To

Singer, an easy distinction can be made between firstly, a person as a rational, self-conscious being, aware of herself as distinct entity with a past and a future, in short, a biographic life, secondly, a mere sentient being, lacking the aforementioned characteristics but having the ability to experience pleasure and pain, and lastly, a non-sentient being, unable to experience pain (Singer, 1999).

As a preference utilitarian, Singer does more though. He also looks at the potential harm, preferences and interests of those subjects involved. In line with his ethics, these harms, preferences and interests have to be weight up to make decisions, all with the principle of equal consideration of interests in mind. This holds true independent of the subject's species membership, as a consideration strictly due to species belonging would be a speciecist act. Speciesism, "a prejudice or attitude of bias in favour of the interests of members of one's own species and against those of members of other species" though would be just as bad as any other given –ism like racism, sexism, or anti-Semitism to name only some (Singer, 2002, p.6).

2.3 Animal Welfare-Oriented Arguments

In this section, I will show what an animal welfare-oriented zoo should make its paramount goal. Husbandry as well as collection options will be presented with a clear focus on feasibility. I will expand on and analyse, discuss, and contextualise the animal welfare-oriented arguments in depth, critically reflecting on their strengths as well as potential shortcomings. After this, I will bring together the respective three lines of arguments, something that has not been done in the zoo critique thus far. I will briefly outline the core arguments before weaving them into what I will call the zooture; the future ideal zoos should strive for to be morally more legitimate institutions at last.

2.3.1 An Introduction to the Animal Welfare-Oriented Arguments

The lion's share of arguments from ethical zoo critique questions that the zoo reaches its supposed main goals: "care (including welfare) and conservation (including education)" (Palmer & Sandøe, 2016). The topic of animal welfare within the zoo, a topic focusing on an individual's life, is often brought forward by animal welfare scientists and animal welfare ethicists. With regards to the second line of arguments, the ones regarding conservation, it is somewhat different, given that it refers to a species' survival, rather than to the individual animal. While conservation biologists might focus on the survival of species, animal rights

philosophers, engaged with conservation issues, might have some trouble to restrict their perspective like that. After all, the interests of individuals can possibly clash with the overall interest in species survival. Then there is a third set of arguments that go beyond animal welfare-oriented or conservation-oriented arguments, those that are more theoretical, and which I refer to as ethical arguments beyond welfare and conservation. Scholars employing these arguments typically approach the zoo from a broader perspective, including for example the power relations in the human-animal relationship.

The first line of arguments comprises what I refer to as animal welfare oriented arguments. I will go into more details about the ethical arguments involved in animal welfare and why they count in the following sub-chapter. In contrast to the two other lines of arguments, animal welfare arguments are mainly concerned with individuals and with the effects of captivity on them. In this thesis I am working with a definition for welfare used by the World Organisation for Animal Health (OIE) that understands welfare as "the physical and mental state of an animal in relation to the conditions in which it lives and dies" (World Organisation for Animal Health, 2020)[11].

The main dilemma in terms of zoo management is that the institution has "to strike a fine balance between the display of animals for public pleasure" and economic profit as well as "for public education and for animal conservation, while also providing the animal with optimal individual care" (Braverman, 2011, p. 822). This quest of providing the proper, welfare-oriented care refers to zoo species of all kinds but surely also to those animals most displayed to and loved by the public, the charismatic megafauna. The challenge comes especially with those animals with complex social and cognitive needs (Benz-Schwarzburg 2020) as well as with natural habitats and territories, and thus corresponding behavioural repertoires that might prove to be difficult to mimic in artificial settings.

[11] "Animal Welfare: means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. "Animal welfare" refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment." (World Organisation for Animal Health, 2008).

Luckily, first-generation zoo exhibits, that displayed animals crammed into tiny cages to the public, are almost completely banished in Western Europe. “Second-generation exhibits (of which many remain) can still be fairly austere” but they make at least “modest attempts at including ‘cage’ furniture” that are usually “constructed of inorganic materials such as concrete and often surrounded by a water-filled moat” (Esson et al., 2010, p. 12). Those “are designed, at least in part, with the welfare of the animal in mind” (Esson et al., 2010, p. 12). These second-generation exhibits are still the norm behind the scenes, in night and winter quarters, where the public eye is absent.

The changes in exhibit design and zoo architecture, however, were also the result of a more limited supply of animals coming from the wild, since the trade of animals, endangered ones in particular, was under much more restriction since the ratification of CITES in the 1970s. A side effect of this regulating of the trade of wild animals was that the conditions animals lived in and were kept in were greatly improved as most animals only show successful reproductive behaviour if at least their basic needs are met (Dittrich, 2008). Enclosure designs that really imitate the complex natural surroundings of the animals’ natural habitat are for sure in many cases difficult to implement. So, while the living conditions of animals in zoos have changed a lot measured against a really bad standard before World War II, many zoo animals still live in enclosures resembling the ones offered post 1945, maybe renovated in the 1970s to 1990s. Also, “the regulatory supervision of zoos differs from country to country: non-existent in southern and Eastern Europe, but tight [for example] in Finland, Sweden and Norway”, (Johnson, 1990, p. 318, addition by the author). Whether exhibits come close to animal welfare standards of today is thus questionable and will also greatly differ from country to country.

With a glance back at Hediger, the welfare of captive animals, and thus their living conditions in captivity should be evaluated against the kind of life they lead in the wild. And the question here has to be whether or not zoos can provide the space and complexity for a comparably good quality of life the animal would likely have under flourishing conditions in the wild whilst simultaneously meeting its interest in avoiding suffering (DeGrazia, 1996, p. 258ff.). According to DeGrazia, who starts off from the welfare-oriented “Principle of

nonmaleficence", this principle can be specified into 15 rules, with the third ("Don't cause significant suffering for the sake of your or others' enjoyment") and the fourteenth ("Provide for the basic physical and psychological needs of the zoo animal, and ensure that she has a comparably good life to what she would likely have if in the wild") being the most pressing with regards to the zoo (DeGrazia,1996, p. 258ff., 279-280, 294).

Suppose that we as humans are entitled to keep animals in captivity, what would species-appropriate housing conditions mean? One would have to ask if there could ever be a form of adequate animal housing or welfare-oriented animal husbandry. Prominent zoo critics, among them Colin Goldner, deny this possibility, reaching their conclusions by stressing the demands of physical and psychological welfare (Goldner, 2015, 440).

Often times, good welfare is referred to as a state of absence of pain. But welfare obviously can mean much more. In addition to physical health, mental health might be an issue. Enduring frustration or non(physically)-painful states, like plain boredom due to a chronic lack of exercising physical and mental abilities might thus still be a problem and have been associated with stereotypic behaviour, not only in zoo animals but also in farmed animals (Wemelsfelder, 1994, 2005; Špinka & Wemelsfelder, 2011; Benz-Schwarzburg, 2020, p. 360-386). Defining welfare in terms of absence of pain might thus be way too simplistic. Also the often referred to Five Freedoms[12] (a set of ethical rules that are at the heart of the previously cited welfare definition of the World Organisation for Animal Health and that date back to the 1970s, where they were put forward by the recently renamed British Animal Welfare Council (AWC)) might not cover everything to ensure good animal welfare (Manteca et al., 2012). The rule's emphasis on basic needs for example distracts from more complex needs that might hide in Freedom 4 (highlighting normal behaviour, including social behaviour) and Freedom 5 (highlighting mental suffering). Still, zoos might settle with a focus on Freedoms 1-3, providing for the more obvious things like food and water, a shelter and resting area as

[12] 1) Freedom from Hunger and Thirst - by ready access to fresh water and a diet to maintain full health and vigour. 2) Freedom from Discomfort - by providing an appropriate environment including shelter and a comfortable resting area. 3) Freedom from Pain, Injury or Disease - by prevention or rapid diagnosis and treatment. 4) Freedom to Express Normal Behaviour - by providing sufficient space, proper facilities and company of the animal's own kind. 5) Freedom from Fear and Distress - by ensuring conditions and treatment, which avoid mental suffering.

well as veterinary care. That this is what some zoos restrict their care to appears to hold true especially in cases where zoo animals are living on the verge of mere existence, barely held together by the means of permanent veterinary monitoring and constant and routinely used medication (Goldner, 2015).

The past few decades of research into zoo animal welfare have revealed a wide range of welfare concerns. There is a never-ending list of abnormal behaviour indicating an impaired welfare in zoo animals (Clubb & Mason, 2003), be it stereotyping elephants (Kurt & Garai, 2001, Greco, et al., 2016, Haspeslagh, et al., 2013), primates suffering from trichotillomania, an obsessive-compulsive disorder leading to a "pathological intensification of natural grooming behaviour, frequently with hair ingestion" that is a sign "of psychogenic maladjustment to a poor environment" and therefore a clear sign of psychological stress (Wolfensohn, et al., 2018), or carnivores, of which up to 82 % display stereotypical behaviour in a zoo (Mason & Latham, 2014).

This is, naturally, only the kind of research undertaken in cooperation with zoos. We should be aware that high welfare standards in terms of enriched and structured housing conditions might only be accessible to what could be called the "front shop personnel" in zoos, those animals presented to the visitors who are housed in more and more adequate conditions. Behind the scenes, however, the situation can be much more ethically problematic. So whilst the living conditions of those animals on display already seem questionable with regard to their limited quality of life, welfare concerns and other concerns like a lack of self-determination and control over the environment, every now and then horrendous happenings from behind the scenes reach the public like the beating of young elephants at Hannover zoo that was exposed by animal rights organisation People for the Ethical Treatment of Animals (PETA) or by investigative journalists (PETA, 2017).

2.3.2 Analysis, Discussion and Contextualisation of Arguments

The animal welfare oriented arguments' legitimacy is expressed in the previously mentioned belief that the zoo has "to strike a fine balance between the display of animals for public

pleasure, for public education and for animal conservation, while also providing the animal with optimal individual care" (Braverman, 2011, p. 822). In an interplay as complex as the one between humans and non-human animals at the zoo, it is almost inevitable but therefore not automatically "acceptable to sacrifice the interests of one animal to benefit another" (Hosey et al., 2013, p. 583).

Critics who refer to welfare arguments in the case of zoos want to ensure the individual animal's physical and psychological well-being, so that they lead "a happy, pleasurable, relatively painless life" (Matheny, 2006, p. 14). Zoo proponents might see little concern for animal welfare as long as the animals show "a reasonable amount of natural behaviour", arguing that the animals won't "miss" much, not "their life in the wild" and also not "their freedom in the strictest sense" (Bostock, 1993, p. 46). Indeed, zoos today have allocated more space to the animals but welfare-relevant changes also include more natural enclosure design, enrichment as well as more specialised and accurate medical and nutritional care. Following this argumentation, the "amalgam of several considerations, the main ones being health (longevity, physical and mental well-being), breeding, and preserving natural behavior (along with a corresponding lack of abnormal behavior)" are to explain why zoo animals do not suffer under their captivity (Zamir, 2007, p. 128).

As Bostock points out, we have over the course of the past centuries "seen that various relatively wild animals can be kept in zoos in what may reasonably be regarded as a state of well-being" (Bostock, 1993, p. 192). Nonetheless, he acknowledges that "much zoo-keeping today is still, by those criteria, falling short of what our responsibility to the animals concerned requires" (Bostock, 1993, p. 192). We have good reasons to believe that despite the zoos having evolved, welfare can still be much improved in many facilities. In any case, "animals are sentient, and many of them must have consciousness or awareness; many must be able to suffer and to experience pleasure" (Bostock, 1993, p. 134). And it is this ability to feel, suffer, and experience pleasure that makes it necessary to discuss potential shortcomings of quality of life and individual animal suffering in captive conditions in zoos. Zoos in principle recognise this as a task.

The VdZ at least states that it aims to offer the animals kept at their member institutions facilities the best possible living conditions. It goes on to argue that adequate and species-appropriate housing, nutritional care and good veterinary care is always guaranteed, that many animal species are kept in enclosures that are as close to nature as possible and – wherever possible – are kept together with other animal species in the same enclosure, thus stimulating and enriching the animals mentally as well as physically. It also argues that every year, many considerations and the expertise of the zoo staff go into the further development of the animal facilities. In 2017 alone, the VdZ zoos invested 110 million euros in the further development of animal enclosures and animal welfare (Verband der Zoologischen Gärten e.V., 2020).

Naturally, whilst this sounds reasonable at first, one has to question if there can ever be something like species-appropriate and adequate housing for wild animals at the zoo. Can an institution like the modern zoo really provide for true welfare, or is the idea of welfare at the zoo an oxymoron in itself, given that the only species-appropriate living conditions for an animal that is called wild, can be found in nothing but the wild?

This problem has been addressed on two levels, that of physical health and that of mental health. The aspect of psychological welfare has been approached with great fervour over the past two decades. The means of enrichment devices are often used to tackle both, physical as well as mental well-being in zoo animals. But the stimulation of their mental capacities is not only addressed by the more natural design of their enclosures but also by special enrichment devices. Enrichment, the stimulation of physique and psyche, is referred to as “any change to an animal’s environment that leads to a positive outcome and thus brings about improved or enhanced welfare” (Hosey et al., 2013, p. 279). This of course, is also done to prevent or at least limit the quantity of display of abnormal behaviour such as self-directed displacement or self-injurious behaviour.

From a positive perspective, these changes are what lead even harsh critics to acknowledge that big enough and enriched enough enclosures make a difference, indeed. Zamir credits this by saying that “if a pack of chimps is kept in a fenced park that is large enough, such a life does not involve deprivation” (Zamir, 2007, p. 132). But from a negative perspective, the

conditions of even the finest state of the art enclosures fall short compared to the standard of a hugged park. Per definition, caged animals are restricted in their movements and cannot roam a territory as big as the one they could inhabit in the wild. Perhaps this is the most abstract thought of animal welfare oriented-arguments as some animals might even in the wild choose to inhabit a small habitat only with a small range. The option of free movement however is something that is completely out of reach for them in any form of captive housing and therefore its limitation the worst "form of deprivation because, for many animals, it is experienced as such (behavioral problems and the disinclination to breed in captivity suggest this)" (Zamir, 2007, p. 130). Thus, while size per se might not be the main problem, a reduction in movement means fewer stimuli and little stimuli to the extent we find in barren cages amounts to deprivation.

There is wide consent about these consequences of inadequate husbandry and living conditions in zoos. Any sort of abnormal behaviour, like "excessive grooming, pacing and self-mutilation is common among the animals in the present quality zoos, and difficulties with conceiving and rearing offspring is another indicator of stress" (Garner, 2005, p. 140). In zoo animals, this stress even got its own name and is referred to as zoochosis[13].
As Clubb and Mason have shown, the keeping of some animals is more than debatable from an animal welfare-oriented position (Clubb & Mason, 2003). This holds especially true for the charismatic megafauna the average zoo-goer craves to gawk at. The natural habitat of these sexy box-office animals, like lions, tigers, giraffes, or elephants, simply cannot be mimicked in inner-city facilities with limited capacities when it comes to quantity of space and stimuli. And even if they try very hard to make up for the lack in quantity of space by upping what is considered to be the quality of space by enriching the captive surroundings and endorsing mental and physical stimulation in the animals, the emulation of adequate housing conditions for these animals amongst others is close to if not outright impossible. So in a nutshell, their captive lives can categorically be seen as inadequate and if not as acts of cruelty, at least as not fulfilling the animals' needs sufficiently.

[13] Zoochosis can be defined as a „psychiatric illness in animals caused by confinement such as in cages. Zoochosis is almost never encountered in wildlife in its natural habitat" (Maulana, Gawi, & Utomo, 2020, p.1).

Zoos seem unable, on a whole, to provide these species with the space or complexity for a life comparable to the rich life they have in wild populations. This is not only because of lack of space in zoos results in a lack of stimuli from the environment. It is also because zoo animals face a severe lack of social stimuli coming from group composition in captivity. A pack of lions (*Panthera leo*) in the wild can consist of up to 30 adult individuals (Schaller, 1972, p. 34-35), a group size also found in African elephants (*Loxodonta africana*) (Nandini et al., 2018, p. 150). Some big European zoos are already taking measures to counter too small or otherwise questionable group composition. Frankfurt zoo for example, has phased out its keeping of *pachyderms*, as early as the 1980s (Zoo Frankfurt , n.d.). And other zoos are following this path, slowly but steadily ceasing to fill their naturally decreasing stock of elephants. This however, is a trend that needs to be pushed by ethical argumentation and a self-critical stance of the zoos and the umbrella organisations.

And then there is another elephant in the room that, from an animal welfare-friendly perspective cannot be ignored, the stock management in zoos. With regards to animal welfare oriented argumentation, it appears to be inacceptable that some of those animals kept in zoos die not due to illness or decrepitude but man-made problems like a shortage of adequate housing options, or an undesired gene- or sex drift. Or simply, because due to the good husbandry, enclosures become so overcrowded that killing the animals is the easiest option to rid of surplus inhabitants (Etzold, 2008). Even though “in order to maintain a sustainable environment it may be necessary, from time to time, to sacrifice individual animals“, this practice of culling surplus animals is in harsh contrast with welfare arguments that aim at a reduction of unnecessary individual animal suffering, and ethically problematic (Garner, 2005, p. 145). Killing because we have bred too many or do not need the genes is not a case of euthanasia necessary to avoid suffering. It rather seems a strategy to solve a problem (without much costs), which we have created ourselves by our breeding management. The strategy clearly shows the disadvantage of a pure welfare perspective: as long as the killing is done painlessly, it is no big problem. Death, if one does not have a right to life, can be taken rather lightly. Bostock even goes so far as calling culling of surplus animals in zoos an “occasional regrettable necessity, of course to be carried out humanely if at all” (Bostock, 1993, p. 147). This seems counter-intuitive and it is for sure cutting a complex issue short.

Rightfully, the practice of "euthanizing individual animals in the service of promoting genetic diversity in captive populations" is amongst the most critical methods used in zoo animal management (Donnelley, 1995, p. 27). While the "killing of surplus animals is taken for granted by both farmers and 'fancy' breeders", those breeding for certain standards (Bostock, 1993, p. 147), the practice nicely illustrates the double and triple-standards we measure the value of animals against in zoos. Whilst a blind eye is turned to the fact that fancy breeders kill those individuals with unfavourable colours as a business practice, the euthanasia of a male lion seems out of bounds if it happens for no other reason than that of over-populated zoo studbooks[14]. This is especially the case in individuals belonging to those species conservation efforts focus on. But it has also to do with the question what is – or rather should be – accessible to the eye of the visitor and the public in the first place. What warrants keeping some animals in the zoo? Why should they be made available to the human eye? What warrants restricting their welfare, but also their freedom? All these questions seem to be there irrespective of the welfare question. But they are being pushed to the background when "good zoos prop up the overall welfare of most of the animals they keep" and argue that "as long as the welfare needs of a particular zoo animal are accommodated, we are justified in holding that life in captivity" (Zamir, 2007, p. 128). The implications of this on conservation will be discussed later.

2.3.3 Identification of Common Grounds: Bringing the Three Lines Back Together

Animal welfare is restricted in most settings of husbandry. Of course there are animals who suffer less under their artificial housing, some *invertebrates* with seemingly low demands in their habitat preferences one could argue, or those bred for human-driven husbandry for example. But, "unlike cows, pigs, hens, or sheep, zoo animals such as tigers, elephants, snakes, penguins, zebras, parrots, and other crowd pullers all live outside human supervision and do so successfully" (Zamir, 2007, p. 130). Domesticated companion or farmed animals "all appear to require some space for grazing and/or exercise, but given such space their lives

[14] There was a public outcry about the zoo director discussing the culling of a male lion and public favourite in Nuremberg zoo (see Probst, 2022).

with humans appear to be good ones[15]", which could be said about zoo animals with spacious and a plethora of species-appropriate enrichment (Zamir, 2007, p. 132). In the case of the majority of animal species kept in zoos, one can say that their natural existence "does not depend on human action. If we avoid hunting them down or destroying their ecosystems they can survive. Placing them inside cages is accordingly not in their interests" (Zamir, 2007, p. 130). Other than that, Zamir argues that with wounded or endangered animals captivity could only be acceptable "if it is conceived as a temporary stage, preparatory for the eventual release of the animal" and not one of normality (Zamir, 2007, p. 130). This is an interesting idea because it offers a window in which captivity in zoos could be morally permissible. What Zamir describes is the policy of rehabilitation centres caring for injured or orphaned wildlife. Here, temporary captivity is morally warranted as long as release is the ultimate goal. Note, however, that such institutions often face the problem that some of their inhabitants are unsuitable to be ever released again. Still, their case is different than from most zoo animals who are bread and born to be kept behind bars for the remaining of their lives.

Here, captivity is not a necessity resulting from the individual life history of the respective animal nor is it a temporary condition. They will face captivity for their entire lives but compared with domesticated animals fulfilling their needs in captivity is much more demanding: "A laying hen can be kept by humans in a morally acceptable way. A lion, a bear, a chimpanzee, or an antelope cannot" (Zamir, 2007, p. 132). At least not in the present-day zoo with its many limitations in and restrictions of animal welfare.

Recent findings cement the notion that "zoos with many animals, large animals, high species richness (particularly of mammals), and which are dissimilar to other zoos achieve higher numbers of visitors and contribute to more in situ conservation projects" (Mooney et al., 2020, p. 1). These would still be exactly those species that are close to impossible to keep in captivity satisfactorily, with an *a priori* impairment of their welfare.

[15] This is not saying, that I agree with the practice of keeping domestic animals – in industrial or other farming settings.

It is this ideal, adhering to a principle of nonmaleficence or no harm, that makes each and every short fall in terms of animal welfare in the zoo a moral problem. If there is one take-away message from the welfare-oriented argumentation, it should be this: physical and psychological welfare in animals should not be impaired but they both are impaired in many zoo animals. Species-appropriate housing conditions nurturing both physical as well as psychological well-being of the animals should be paramount. With the ideal being to mimic and provide the space and complexity of the wild one has to accept that these species-appropriate living conditions may not be feasible for some animals, for example the megafauna. This is already brought forward by some scholars whose "findings indicate that the keeping of naturally wide-ranging carnivores should be either fundamentally improved or phased out" (Clubb & Mason, 2003, p. 473, also Mason & Latham, 2014). Especially when the limitations of husbandry conditions are experienced as such, zoos fall short of the good welfare they should strive for.

2.3.4 Applying the Arguments to the Zoo of the Future

With this in mind, one of the most urgent matters to be addressed is that of individual animal suffering within the zoo. Although certain changes can be observed, the focus in zoo architecture still lies on the human visitors instead of the non-human inhabitants. A lot has been done for the visitors' benefits. Rest rooms and restaurants have been modernised, refurbished, and improved, but little has been done in comparison to the animals' facilities. Within zoos, most space is still taken by footpaths, playgrounds, and other remarkably human things, and even walk-in enclosures seem to offer more space for humans than animals, something easily observed by studying idle zoo plans. The focus still is on the human interests and comfort. But the human comfort should in no way overtrump the animals' needs.

One of the most efficient ways of reducing individual animal suffering at the zoo is by selecting its inhabitants by their potential to suffer under the offered living-conditions. For there are certain animals imaginable that suffer less in captivity, or whose living conditions are easier to mimic than others, certain members of the *invertebrae* jump to mind immediately, compared to big carnivores or migratory species who roam huge areas, animals

with complex social lives, including social hunting strategies, or birds of prey who sail in thermal lift for several hours a day (see e.g. Benz-Schwarzburg 2020, p. 364-366). One could argue that a frog suffers less from being kept in a decent-sized paludarium whilst being gazed upon by human visitors than a primate under similar conditions who most likely does because of differences in quality of live the enclosure can offer. Recent findings encourage new species selections, indicating that collections with "many small animals may also be effective" in drawing in the paying crowds (Mooney et al., 2020, p. 1). In a nutshell, one can assume that the more the artificial surrounding an animal finds itself in diverges from its natural habitat and the more it infringes the animal from living out its natural behaviours, the more unsuitable a candidate the animal is for captivity.

When imagining what captivity would have to look like and what it would have to fulfil in the most debated cases like dolphins, polar bears, primates or elephants, it becomes obvious that acceptable models of captivity are almost impossible to achieve for them. An appropriate husbandry regime and enclosure design are simply unfeasible for some animals. Polar bears roam areas the size of Lower Austria with an average temperature of -20° C on their constant search for prey. They simply cannot be kept appropriately in inner-city enclosures the size of a tennis court with average temperatures over 30° C warmer than those in their natural habitat. And neither can big cats and other big predators, or elephants or primates with their unimaginably complex social systems.

Of course there are certain zoos that "are of a very high standard, in the way their animals' needs are catered for, and in their conservational aims and achievements" and also new research that indicates "and is likely to do so more and more, how we can keep various relatively wild animals fully satisfactory" (Bostock, 1993, p. 193). Yet by and large, most zoos can provide neither the space, nor the complexity of the natural habitats animals would encounter and live in in the wild. Their captivity is poor and should be phased out as done by some zoos already that are not refilling their stock with fresh blood once their current stock has passed. The management of some zoos have come to understand that the achievement of adequate and species appropriate captivity of certain animals simply is practically impossible.

Naturally, one cannot know for sure how much suffering goes on in an animal, but certain physiological parameter as well as the behaviour, especially stereotypical or other abnormal behaviour are a clear sign of formerly or present bad captivity conditions. Conditions that may be greatly improved by enclosures scaled up in both space and complexity, as well as by replicating entire eco systems with many species inside. And whilst captivity itself is part of the zoo, it can be greatly improved by an increased orientation on animal welfare with needs-based approaches.

The welfare of zoo animals – linking to the important aspect of species conservation – also has a massive impact on them being fit for reintroduction. One has to acknowledge that "the more we are able to provide a captive environment which stimulated the occupant and encourages a wide range of its natural behaviour, the more that individual is likely to be a potentially successful subject for reintroduction" (Bostock, 1993, p. 150). This should not derail from the captivity's ultimate goal, that "even though the environment of any particular zoo animal is not in itself going to make any difference to the genetic makeup of its descendants, it makes a great difference to the suitability of that particular animal for reintroduction" (Bostock, 1993, p. 150). Reintroduction should indeed be a main focus of zoos.

2.4 Conservation-Oriented Arguments

In this section, I will analyse the philosophical discourse on zoos and wildlife conservation, also looking at possible duties we may or may not have towards (especially wild and/or endangered) animals. I will follow arguments of both sides, in favour, and against keeping animals in captivity for the sake of species conservation when species survival is more important than an individual's well-being. Bridging welfare and conservation-oriented arguments, I will show how improved animal welfare will strengthen conservation efforts. I will also explain why zoos are needed and why close genetic monitoring within them cannot be overestimated.

2.4.1 An Introduction to the Conservation-Oriented Arguments

The second set of arguments, the ones oriented towards conservation, differ from the first welfare-oriented set most dramatically because of whom they focus on. Whilst the welfare oriented arguments had the good of individual animals at their heart, those arguments in favour of conservation aim not at the welfare of individual animals, but at the survival of

entire species. In a way, conservation oriented arguments are thus more holistic in their approach but the price is that the different focus on species might in fact clash with the welfare of (some) affected individuals. If, what is important is the survival of a respective species, a conservation measurement to reach this goal might furthermore not only potentially override individual welfare (e.g. by restraining animals to a small and human-made environment that is barren in comparison to the natural habitat) but also individual rights (e.g. their right to express their normal behaviour and more, a right to freedom). In order to outline this conflict and the turf conservation arguments play on, I will first line out what they mean from a human perspective, before switching over to the animals' perspective.

The core of the matter, as I will show is that, coordinated breeding programmes and the use of studbooks like the European Endangered Species Programme (EEP) ensure that animals will be able to be kept and exhibited in zoos in the future too. The main argument for conservation in zoos is that endangered species in zoos function as backup populations for those in the wild that produce individuals later needed for projects of reintroduction in their natural habitat (Rabb, 1994).

A question that jumps to mind first is one Dale Jamieson asked some years back: "is [it] really better for [the animals] to live in artificial environments of our design than not to be born at all" (Jamieson, 2006, p. 140, additions by author). To many conservationists this appears to be an easy answer, because they seem to presuppose that species should be conserved at great, almost any cost (Hutchins, 2007, p. 105, Durrell, 1990). Answering Jamieson's question along their reasoning, individual animals are objectified and reduced to little more than mere vehicles of their species' genetic material. In this way, zoo animals are used interchangeably and owned, treated as if they were lacking agency, autonomy and self-determination. They are instrumentalised as tools to the zoos' purposes, ticking all the boxes of the objectification check list[16] according to Nussbaum (Nussbaum, 1995). In a way, their genes are secured and

[16] The criteria of the objectified being instrumentality (the treatment of the other as a tool to another's purpose), denial of autonomy (the treatment of the other as if there were a lack auf autonomy), inertness (the treatment of the other as lacking agency), fungibility (the treatment of the other as interchangeable with others), violability (the treatment of the other of denial of integrity), ownership (the treatment of the other as if the other could be owned), and denial of subjectivity (the treatment of the other without an acknowledgement for own interests).

preserved at the expense of overriding the individuals' perspectives, individuals who haven't been asked for their consent to be preserved as gene-pools for the greater good of their species.

Also, one has to keep in mind that with most animal species, conservation might not be a long-term option. Whilst the numerical population[17] size of a captive population might increase over time because of successful breeding efforts, the effective population size inevitably drops from one generation to the next, leading to a gene pool dwindling down in quality and conservation value. Back-up meta-populations *ex-situ* certainly make some sense from a conservation perspective. But only, if there is an *in-situ* population to be backed-up. From a conservation perspective it has to be kept in mind that "by far the best way to conserve wildlife is to conserve its habitat", and that captive breeding per se is not just "an emergency measure" (Page, 1990, p. 87), but also one that is of no value if those habitats and wild populations are indeed gone.

If one decides that it is worthwhile if a life of an animal serves nothing but the cause of gene-transportation from the present into an uncertain future, then "it is up to zoos as well as parks to save as many species as they can for as long as they can, to buy time for wildlife" (Conway, 2011, p. 8). The impact of even single conservation efforts in the field is undeniable though. Even when focussing on a single species, it has to be clear that this species can only be reintroduced into a habitat that is as intact and preserved as possible. Only then, those individuals focussed on can in fact serve as flagship species for their entire habitat inhabited by many more species (Nogge, 1998, p. 455). This link between species and habitat conservation needs to be a core focus in conservation. By becoming an umbrella, all species within the umbrella species' habitat, too, benefit from the conservation efforts, then.

At present, however, "zoos seldom participate in species or habitat restoration. In the USA it is not zoos but organizations such as the National Audubon Society, the International Crane Foundation and the Peregrine Fund" that saved and are indeed "re-establishing auk, tern and puffin colonies, cranes, eagles, falcons and even small island birds" to their natural and

[17] More on population genetics and its impact on wildlife conservation in chapter 2.4.2.1.

former habitats (Conway, 2000, p. 9). For sure, it is an attractive focus, or even a "logical and inspiring role" for today's zoos "to become proactive conservation organizations and engines of conservation." However, as Conway (2000, p. 13) so aptly put it, 'zoos and aquariums were not designed to be conservation organizations'. The question is, can they be?".

Zoo proponents often time claim that zoos help raise awareness for conservation in the visiting public (Nogge, 1998, p. 456), the success of task is very much under debate (Marino et al. 2010; Dawson & Jensen 2011; Moss & Esson 2013). Albeit being a nice idea, that the visiting public is familiarised with the zoo animals and the life and threats their wild conspecifics lead and face, this argument does not appear to hold strong. This became very obvious with regards to Berlin zoo's famous polar bear "Knut". The hype this bear found itself in, the rise of ticket sales, and the increase of income for the zoo itself has done absolutely nothing to protect wild polar bears in their natural habitat or the protection of the Arctic itself (Goldner, 2015, p. 440). When the well-loved polar bear died, flocks of visitors and fans queued up in front of the enclosure the bear used to pace in to lay down flowers, pay their respect, and grief instead of donating money towards polar bear conservation or the preservation of this habitat for other species. Zoo critics might well cite this as a prime example for a missed chance: the case sets the bar quite low in terms of hoping that seeing an endangered animal in captivity leads to a better understanding of the uncertain future this species faces in the wild in the visiting public (Nogge, 1998, p. 452).

Some conservation efforts at the zoo have, however, in fact been successful in saving entire species from extinction. This is, most prominently, true for the Peer David deer (*Elaphurus davidianus*), the Przewalski's horse (*Equus ferus przewalskii*), or the golden lion tamarin (*Leontopithecus rosalia*). The latter, brought back from the brink of extinction in 1982 by zoos underlined the importance of international effort and cooperation (Nogge, 1998, p. 454). The most important institutionalization in this regard is the former International Species Information System (ISIS), now called Species360, the Zoological Information Management System (ZIMS), the European Association of Zoos and Aquaria (EAZA) with its European Endangered species Programme (EEP), and the Association of Zoos and Aquariums (AZA) with its Species Survival Plan (SSP). However, the small number of successful stories of

reintroduction from zoo-bred individuals into their species' native habitat gives rise to question this method. Even more so because the notion of reintroduction can be seen as ethically problematic, given that individual interests and species interests clash in many cases and that we as humans aim at restoring a world we have destroyed, rather than seeing the entire eco systems affected by our global actions.

Still, with a growing effort in the keeping of studbooks and recording of genetic detail, the exchange of genes and management of entire populations in captivity was professionalised immensely. The goal is to keep inbreeding at bay and – as far as possible – to maintain and secure zoo animal populations that are as healthy as possible and remain to be so for generations to come. According to those supporting the conservation work of zoos, there has been a leap forward in conservation equivalent in impact to the milestone in zoo evolution that Hagenbeck's naturalistic zoo enclosure design constituted more than a hundred years ago (Nogge, 1998, p. 453).

One of the most heavily argued shortcomings of zoo efforts in conservation is the chronic lack of financial strength. As Torsten Schmidt, a zoo critic of the German animal welfare organisation "Bund gegen Missbrauch der Tiere" states in an interview, the annual four million Euros raised for wildlife conservation by the big European zoos is a laughing stock with the astonishing number of 40 million paying visitors in those zoos registered with the VdZ alone (Pauli, 2019). Furthermore, the (comparably little) money raised is not distributed equally amongst members: some show the rest how much can be done, in fact. Compared to the 71 institutions belonging to the VdZ, the "Loro Parque" on Tenerife alone donates 20 million Euros a year to its wildlife conservation programmes. This is around five percent of the institution's annual revenue. Zoos could at least measure themselves against those institutions that do a good job, apparently, when it comes to fund raising for conservation. From my point of view, it would make sense to use five per cent as a bench mark for proper, modern zoos throughout the world.

One problem is that the money going to conservation is not always used in the most effective manner. Millions of dollars go, for example, to the breeding in captivity and conservation of

giant pandas, most importantly into in-vitro-fertilisation. But from all the money spent by zoos worldwide on breeding of pandas by in-vitro-fertilization, only one single cub was successfully reintroduced into its wild habitat (Barthélémy & Leszczynski, 2017).

With regards to monetary issues, an argument frequently brought forward is that "humans may wish to preserve wild animals for a variety of reasons, from the aesthetic pleasure they gain from their existence to medical or economic benefits that might accrue" (Garner, 2005, p. 144). Most of these reasons, be it guilt or aesthetics are highly anthropocentric and of different ethical weight. What indicates this to be true is that "virtually all international wildlife treaties emphasize the benefit to humans of conservation" (Garner, 2005, p. 144). And whilst conservation might in fact bear value to humans, it is not just valuable to them, but the conserved animals species as well, that can continue to flourish, even if it might not be of interest to the individual of the species, whose life and freedom is impaired by having become an object within the grand scheme of conservation.

Also, conservation in terms of captive breeding becomes questionable when animals are not healthy and show abnormal behaviour. This brings back the question, whether we are in fact breeding wild species when breeding animals at the zoo. Whilst animals in zoos "are indeed relatively wild, [they] are also […], slightly domesticated" (Bostock, 1993, p. 53). One argument for this perspective is the fact that "when animals breed, one is unavoidably selecting, to some extent, for animals that can adapt to captivity. And this clearly is a step towards domestication. So when animals are born in zoos, they are slightly domesticated" (Bostock, 1993, p. 54). Recent scientific findings also suggest that animals showing abnormal and stereotypical behaviour tend to produce more offspring as they have found an unsightly but effective way of coping with their stress from captivity. Interestingly it appears that at least in some species "there is a strong genetic basis for the development of stereotypy", too (Schwaibold & Pillay, 2001, p. 273). With this in mind, the quality of the "biological material" of zoo breeding programms is debatable.

The question of abnormal behaviour or stereotypies, however, only addresses part of the animals' behaviour. Behaviour that is typical and (largely) innate to a species but not

immediately health-related might as well be changed by captivity. The same holds for traditions or animal culture usually largely acquired behaviour, defined as "a system of socially transmitted behavior" (van Schaik et al., 2003, p. 102; Matsuzawa, 1999; Sanz & Morgan, 2010; Whiten et al., 1999, p. 682).

It seems unfortunate that zoo conservation is a very challenging task. Because, as I will show, from a utilitarian perspective, the fourth pillar of the modern zoo is the most "powerful justification offered for these places" that are "essential to keep the individuals and species in their care from extinction in their vanishing habitats" (Haraway, 2008, p. 223). When it comes to conservation, philosophers and hard-core zoo supporters appear to agree upon the fact that "if we care about the future of life on this planet, then we must make conservation our highest moral imperative" (Hutchins, 2007, p. 105). However, whether zoos, as they operate today, are essential for conservation, can be questioned. Some would argue that as "reservoirs and sanctuaries for endangered species it is impossible to overemphasize their potential contribution" (Durrell, 1990, p. 7). But one could argue that the conservation output of zoos is currently minimal as well as replaceable by more effective conservation organisations that are achieving much more in terms of re-introduction of species and conservation awareness without displaying animals to the public. If the zoo of the future was indeed comparably successful or even more successful than other institutions, it would gain an important pro-argument.

2.4.2 Analysis, Discussion and Contextualisation of Arguments

2.4.2.1 Changing Environments and the Argument of Conservation

As mentioned before, this second set of arguments concerning conservation differs from the first set of animal welfare oriented arguments in that it concerns not the individual animal of a species, but the entire species itself. The nature of these arguments is much more holistic. When addressing the field of wildlife conservation, it is, of course mandatory to argue why exactly it is important to the zoo. So in this first passage, I will show how the environment has changed over the past centuries and analyse those arguments in favour and against its conservation.

Of course within the potpourri of natural diversity, there are species that fare well whilst others struggle with the changing surroundings and face extinction or ultimately go extinct. However, there are scholars who argue that the rate species go extinct at has reached a completely new dimension in the anthropocene, the time in which humans started to dominate ecological cycles directly as well as indirectly (Engelhardt, 1997, p. 1; Barnosky, et al., 2011).

It is now considered granted that the quantity just as much as the quality of wildlife has decreased drastically during the anthropocene (Barnosky, et al., 2011). So much so that studies show that "populations of wild animal groups have plummeted in recent decades, while human and livestock populations have risen" (Bennett, et al., 2018, p. 2). One astonishing consequence of this trend is that "the biomass of humans and their domesticated animals (including livestock) now outweighs that of all wild terrestrial vertebrates" (Bennett, et al., 2018, p. 2). Recent findings show that farmed poultry make up 70% of all birds on Earth whilst wild birds only make up 30% of the world's avifauna (Bar-On et al., 2018). With regards to mammals, the contrast is even harsher yet. Today, 60% of all mammals in the world are domestic livestock animals, cattle and pigs dominating, 36% are human and an evanescent 4% are wild mammals (Bar-On et al., 2018).

This man-made loss in biodiversity is called the sixth mass extinction and is one of the effects the ever-increasing number of human inhabitants on our planet entails (Barnosky, et al., 2011). Over the past 50 years, this human impact due to a range of factors, amongst them habitat destruction, overfishing, hunting, and pollution has in total lead to the loss of 60 % of the world's wild biomass (Bar-On et al., 2018). The IUCN red list, the most prominent indicator of species flourishing indicates that "27,000 species of animals, plants and fungi are threatened with extinction in 2019, meaning that they are listed as critically endangered, endangered, or vulnerable" (Benz-Schwarzburg, 2020, p.289). So in order to tackle this devastating destruction conservation measures need to be taken. And this task has come into the zoos' focus much more over the past years.

As pointed out in the introduction, for zoos this "conservation - the work of protecting endangered species is at the top of their list", or so they say (Worland, 2017). In order to

proof this point, the AZA urges its members “to spend at least 3% of their budgets on field conservation efforts” (Worland, 2017). Yet, there are hardly any zoos that actually publish the amount of money they use for conservation efforts. And if they do, the exact projects are hardly pointed out and even breeding-efforts themselves are registered under this cost centre. But the call for conservation and the strength of zoos efforts within it are greatly diminished by the actual track record and demonstrable success stories.

Up to this day, there are only a handful of examples that are referred to whenever the topic of conservation in zoos comes to discussion. The Przewalski's horse (*Equus ferus przewalskii*), European bison (*Bison bonasus*), and bearded vulture (*Gypaetus barbatus*) are some of these prominent species. Another one of the very few success stories is the one of the Arabian oryx (*Oryx leucoryx*) that has been saved by breeding in zoos and with populations flourishing again now in their original habitat. This however only turned out to be successful a project because the local Harasis people where integrated into the efforts “as protectors, wardens, and observers” who then “in turn have benefited from the project, for they have earned more from it in wages through the 1980s than from the oil industry. The oryx have again become part of their culture, and are the major prop for their economy” (Tudge, 1991, p. 143). This aspect appears to be crucial in all reintroduction success stories: that conservation efforts must “contribute to economies (or at least not detract from them) if they are to be secure; that they must have the approval and connivance of the local people; but that benefit to human beings should not be the prime motivation for those projects” (Tudge, 1991, p. 143).

The idea behind the zoo serving as an ark for genes that would be lost if it were not for the stewardship and safeguarding of the genes in form of captive individuals does sound logical at first: if the wilderness vanishes and with it all the species that inhabit it, at least a number of individuals of these species survive in captivity. Around 150 species are bred coordinated and in accordance with the European Endangered Species Programme (EEP) in European zoos with the hope of conserving at least an *ex-situ* population of these species that could in the distant future be reintroduced to its former habitat (Pauli, 2019). All in all, there are less than 100 species that were saved from extinction by zoos. Yet, ten thousands of zoos around the

World use these few examples to justify their keeping of millions of animals in their confinement.

Less than a decade ago, there were "33 animal species currently classified as 'Extinct in the Wild' on the IUCN Red List" (Dick & Gusset, 2012, p. 2). In 2020, there are 38 species that are listed as "Extinct in the Wild" (International Union for Conservation of Nature (IUCN), n.d.)[18]. The abbreviation of "EW" is given to those species that are no longer to be found in the wild, and that have only been saved from complete extinction due to the efforts made to keep them in captivity, and with these captive individuals being the last of their kind.

One has to bear in mind however, that this conservation of species might not be a solution that will last forever. Gene pools go down in quality as their generations go up in quantity if no fresh blood is added. The reason for this is that what is called the 'numerical population', the *quantity* of individual animals, might be high to start with or go up due to successful breeding. This index however is of lesser importance to a species' survival than the second term 'effective population size'. This refers to the diversity of genetic make-up within a given population and thus refers to the *quality* of genetic material. As the individuals are bred with one another over the generations, with smaller gene pools to revert to, the inbreeding coefficient, the degree of relatedness, rises. And with an increase in inbreeding, the quantity of homozygosity increases. In doing so, the chances of otherwise heterozygous alleles that would back-up unhealthy genes is reduced. The effect of this is called inbreeding depression that in the long run ruins a gene pool (Franklin, I. R., 1980). The quality of genetic makeup therefore cannot be overestimated in wildlife conservation as even a high numerical population size may be of little, if any conservation value whenever the effective population size is so low that the population is doomed to suffer from inbreeding depression as there will not be new and fresh alleles to strengthen and boost the population.

[18] The advanced search on the IUCN's website (www.iucnredlist.org) allows for the selection for taxonomy (in this case *Animalia*) as well as the red list category (in this case "EW – Extinct In The Wild"). Note, that these are just the species gone extinct which are monitored. There might be unknown species going extinct before we become aware of them. For the majority of species worldwide data is too deficient to even evaluate their conservation status.

And even if one were to see the captive meta-populations *ex-situ* as back-up populations, as zoos claim, those need to have *in-situ* populations to back up to be of considerable value. So with captive populations of animals, especially those of the charismatic megafauna, their *a priori* limited quantity in genetic carriers limits the value of the gene pool for conservation. The quality of the gene pool even decreases from generation to generation which makes it ever so much more important not to have to have to fall back on *ex-situ* breeding, but stick with the notion of accepting untouched wild habitats to be the best outcome and realise that "by far the best way to conserve wildlife is to conserve its habitat, and that captive breeding per se is an emergency measure" (Page, 1990, p. 87).

But even with this biological knowledge in mind, and under the conviction that the survival of a species is of greater importance than the individual life suffering from captivity, one might acknowledge the idea that "it is up to zoos as well as parks to save as many species as they can for as long as they can, to buy time for wildlife" (Conway, 2011, p. 8). Saving time for wild populations zoos probably can as demonstrated by the aforementioned conservation successes. Also, it cannot be overemphasised that one single species in a way can have the power to serve as flagship species *for their entire habitat* which is also inhabited by many more species that all benefit from the efforts (Nogge, 1998, p. 455). One of the most notable flagship species is the Giant Panda (*Ailuropoda melanoleuca*) in whose conservation efforts shadow all sorts of other, perhaps less charismatic species of flora and fauna flourish.

Another topic that smoothly links the ideals of conservation analysed in this passage with the subject of individual versus species survival of the next passage is the one of what really is conserved. Animals are of course, made out of more than their mere genes. Those might be called the hard facts that are to be preserved. The other aspect, however, is much more difficult to conserve, especially under less natural conditions. These soft aspects are in some ways just as important in the species' survival as the hard ones are. One straight-forward example of a loss of soft factors potentially leading to a loss of the hard factors, the entire species itself, is that of adaption to its surrounding. Imagine a migrating species passing on its traditional migrating routes it depends on for survival from generation to generation. Recent findings in monarch butterflies suggest that behaviour such as the migrating behaviour is lost

in those animals bred in captivity to back up the wild population (Oberhauser, 2019). As touched upon in the introduction, these animals loose parts of their species' immaterial character trait, their culture. If these individuals *sans* migration knowledge were to be reintroduced into the wild, their lack of migration skills might have detrimental effects on their wild counterparts, were they to do what they were bred to do: intermingle and boost the wild population. As scientists forewarn, "if such butterflies spread versions of genes that could thwart migration processes if introduced into wild population" (Oberhauser, 2019). And this appears to also hold true for other species far away on the phylogenetic tree. In the past, it has proven to be the case for the migratory skills in *vertebrata*, for example in Northern bald ibis (*Geronticus eremita*)[19] or Canada geese (*Branta canadensis*)[20] (no matter whether their origin is innate or learned or both). And with a lack of these soft aspects, the value of these individuals would be as low from a perspective of conservation as it would be for scientific research. Reducing conservation to a preservation of "hard aspects" like the genes themselves is shortsighted. It overlooks important soft aspects and their possible impact on genes.

2.4.2.2 Individual Versus Species Survival

The very nature of zoo animals serving, in essence, as mere vehicles for their species' genes is by far the greatest dilemma one faces when trying to address both, welfare as well as conservation-oriented arguments in wildlife conservation. The question of what to pay attention to is where a potential right to bodily integrity or good welfare of an individual clashes with something like a species' "interest" in survival and flourishing. It is here that the perspectives of the affected individuals are contrasted against the perspectives of entire species.

With the arguments from the chapter on animal welfare-oriented arguments in mind, it is quite clear that in many cases, setting the species' needs and survival first encompasses a certain deprivation of welfare but also animal rights of those individuals utilised for conservation. When looking at zoos, the most pressing one of course is that of condemning

[19] See (Fritz et al., 2017).
[20] See (Wang, 2006).

these individuals to a life in captivity. The quality of life under these circumstances is under great debate. Sezgin rightfully points out that the last Bengal tiger most likely does not enjoy its captivity (2014, p. 43). The animal's scarcity might increase its collector's value from a human point of view, yet hardly sweetens the individual's captivity (Sezgin, 2014, p. 43).

It is a weak spot in conservation to so much "focus on the species and consider individuals only as a means to the welfare of the species" because such a reductionist view falls short of doing what this thesis set out to do, addressing this question from a more holistic point of view (Jamieson, 1995, p. 72). Such a holistic approach should take both into account, the humans', the species' and the individual animals' perspective, although it is of course hard to determine, what a species' interests really are. Though granted, individuals might have practical interests and aversions that the theoretical concept of a species might fail to assess. As Jamieson argues "we should simply acknowledge that killing or confining an animal to preserve a species is not a conflict between the interest of the individual animal and the interest of the species", it is much more, namely "a conflict between the interest of the animal and the human desire to preserve the species" (Jamieson, 1995, p. 72). Sacrificing interests of one over the other remains debatable, but there is another argument too, being that "there is little evidence that animals other than humans care about species preservation" (Jamieson, 1995, p. 72).

Here, however, it is important to keep in mind that a moral action neither can nor has to remedy *all* suffering (Sezgin, 2014, p. 36). Trying to save a species from extinction whilst taking a degree of individual suffering for granted, or at least accepting it, could still be a morally good action if one follows the idea that "an action is morally right if and only if there is no other action, among those available to the agent, that has better consequences" (Shaw, 2009, p. 6). And when discussing whether a life not lived is still better than one spent in captivity as Jamieson argues, one can challenge this view by speaking in favour of an entire species, rather than of an individual. After all, per definition, a species is made up of individuals. A no-harm principle, a notion trying to ensure an animal's wellbeing can therefore be spread over an entire species, too.

This is also the case when thinking about a species' potential interest. For a lack of a better word, my understanding of evolution is that a species' main but abstract interest is that of survival. And so is the individual's, albeit being distinguishable. So for a species on a meta-level, it might be that individual suffering is perfectly acceptable for the greater good of species survival. But this is an abstract and ambiguous thought experiment. Something less abstract but just as important is the acceptance of the fact that no animal is in captivity by its own will. Animals, as far as we know, cannot choose their fate in this regard. We take this choice of freedom from them and rule over their fate. This is why the decisions should never be made lightly.

Despite the obvious paternalism involved, some have still argued that we are morally allowed to enlist animals "in causes that they cannot understand, because the goal of perpetuating their species and other species is implicit in their struggle to perpetuate their genetic line as an element in the fabric of nature, and of the experiment of life" (Norton, 1995, p. 119). However, whenever captivity is involved in saving a species from extinction, our taking them from the wild also "obligates us to protect them in ways they cannot protect themselves", and this clearly still "involves obligations to individuals" (Norton, 1995, p. 111). The hope and intention should be "that they contribute, in one way or another, to the perpetuation of wild processes, of which they or their descendants can be returned to a wild context free of our manipulations" (Norton, 1995, p. 111). Furthermore, it is not only one species that might benefit from human conservation efforts directly, but also many more.

2.4.2.3 Duty and the Beast - What We Owe to Wildlife and Biodiversity

As pointed out by Benz-Schwarzburg, one of the greatest conflict areas in conservation is the fact that the interests of entire species can potentially collide with those of individuals. The fact that humans, more than any other species are responsible for the need of conserving species in the first place adds to this tension tremendously, especially if not taking action would lead to yet another species being labelled as 'extinct' (Benz-Schwarzburg 2015, p. 47-48).

With our responsibility mapped out, looking at the institution(s) possibly fulfilling this duty, the zoo is one possible candidate, one who's absence might mean that "all sorts of animals will in the future be charging across our television screens merely in historical film of the days before the great twenty-first century extinction" (Bostock, 1993, p. 193). Bostock goes even further stating that neglecting this duty would be "an act of vandalism; we would be showing a great lack of what I called conservation respect" (Bostock, 1993, p. 193). For sure, this does not necessarily mean that we need to do species conservation at the zoo. But it means that we cannot ignore our duty to do species conservation.

How to solve the conflict between individual harm versus species benefits is a matter of ethical theory, meaning that different ethical theories will solve the problem differently. From a utilitarian perspective we should aim for a way "to produce the greatest good or 'utility' for the largest number of individuals (put crudely, 'maximum gain for minimum pain')". In this course, the suffering of some individuals can be "acceptable", provided that it is beneficial to a greater number of *their fellow species members*. Moreover, the suffering of affected animals can even be acceptable as long as it benefits a greater number of *humans*, meaning that the benefit for them "outweighs the costs to the animals" (Hosey et al., 2013, p. 42). It is the decisive method of utilitarianism, its fabric, to balance interests against each other, rendering the "moral game" into a calculation procedure. There is no absolute right of not having one's interest being weighed up like that, nor are there interests that count so much (like for example a right to life) that they are exempt from such weighing procedures. Entering into weighing procedures here might be flawed, however, firstly because the problem to solve (species extinction) is mainly on us humans. Treating animals as equally involved when it comes to paying the costs neglects that they were not equally involved in causing the problem. Secondly, there are other ethical theories that see an inherent problem when it comes to weighing up harms and benefits in principle, at least when we talk about harm that includes basic interests, like an individual's interest in life. Killing humans for the benefit of other humans is rarely considered a first choice solution to a problem and rightfully so. The fact that we seem ready to lightly accept death and severe welfare impacts as costs to pay on the animals' side of the moral game while we wouldn't lightly accept them as costs on the humans' side says a lot about species biases. At the minimum, I would say, we should accept

that balancing is off here to some degree and that other ethical theories can maybe reveal a problematic constellation that is not seen from a utilitarian perspective. What if zoo ethics is not all about welfare? What if the benefits of zoos can in fact not outweigh the harm zoos do to individual animals? What if there are a whole lot of more ethical issues involved that have largely been overlooked by those zoo proponents who rest comfortably on a welfare-oriented, utilitarian account? Still, given that we as humans more than any other species known to date transcendent nature and destroy it in a way that rids it not only of the habitat we as humans depend on as well as the natural habitat of many other a species, but will also make it inhospitable for ourselves, action needs to be taken. Even if this action is taken for humanities own sake more than for that of other non-human species.

2.4.3 Identification of Common Grounds: Bringing the Three Lines Back Together

According to Bostock, a prominent advocate of a welfare-oriented conservation imperative, "there is a strong moral demand on us to conserve species if humanly possible" (Bostock, 1993, p. 140). One has to acknowledge that at least at present, the "extent to which zoos can help captive breeding to save endangered species is of course limited, and most obviously so by the minute selection of species from the animal kingdom as a whole that they are able to keep" (Bostock, 1993, p. 151). Of course, this should not divert from what "they *can* make to the immensely important cause of animal conservation, especially as it is likely to be possible for them, if necessary, to keep a very large portion of the larger – and threatened – vertebrates, mammals especially" (Bostock, 1993, p. 150).

This ability of zoos, the ability to save at least some species from extinction is their one and only moral legitimation. In an interesting thought experiment, one can imagine how society would react to imminent danger or fear of loss of other items dear to them: "If the National Gallery is on fire, we don't immediately accept the sad loss of all its paintings. We try to rescue the best ones quickly […] if we cannot save all, this is no reason for not saving any" (Bostock, 1993, p. 143). So whilst one might have to face the fact that not all species can be saved, it is no *carte blanche* to turn a blind eye on the loss of the majority of species. In line with this argumentation, Bostock says that "the need to save natural habitats such as

rainforests, and the millions of species contained in them, can in any way mean that it is not right to try to save such exceptional species – in terms of their appeal to humans – as the Arabian oryx or the Californian condor" (Bostock, 1993, p. 152). Saving either of them would be "comparable, as an achievement, to saving the Taj Mahal. My emphasis on the animals zoos keep as being invariably ones that appeal to humans may seem unduly anthropocentric, and it also fails to recognise the responsibility a zoo like Jersey feels to save species in need of help […] irrespective of their human appeal. The scientific importance of such work should not be underrated, or indeed the way in which Jersey emphasises the importance of conservation in the field and *ex situ* as two sides of one coin" (Bostock, 1993, p. 152).

With regards to appreciation for man-made wonders and their importance, one can, in order to prove Bostock's aforementioned point, look at what happened in Europe in 2019. In Paris, we saw the Notre-Dame de Paris cathedral literally going up in flames. Within 48 hours almost 1 billion Euros (*sic!*) in funds were raised to ensure its reconstruction. Almost simultaneously, the World also witnessed the unprecedented magnitude of fires in the amazon rainforest that brought death to life on hundreds of thousands of square kilometres and the complex and unique eco-systems within. But in this case, the willingness to give money to save this natural wonder was much more restricted than in the generosity the French cathedral saw. And although Bostock argues that "we should interfere as little as possible both with free living populations and with animals in captivity, provided we are also fulfilling our conservational responsibilities", this appears to be a catch 22 in this particular case (Bostock, 1993, p. 148). Although other authors too have criticised zoos for rarely participating "in habitat and or species restoration projects or funding for conservation efforts in the natural environment" (Carr & Cohen, 2011, p. 178). In that same paper, Carr and Cohen also address the zoos' ability to conserve species at all, arguing that "the ability of zoos to make a significant contribution to the breeding of endangered species due to their limited size in proportion to the requirements of larger animals" is in fact limited (Carr & Cohen, 2011, p. 178). Yet especially with these larger animals in mind, the possibility of loosing animal species for good "is too real for it to be responsible to ignore it. Zoos are taking it seriously. Working together, they could probably maintain most of the larger mammal species, […] for, if

necessary, a century or centuries (Bostock, 1993, p. 141-142). A scenario that, from a utilitarian perspective, certainly is better than doing nothing at all.

In addition to the much improved animal-welfare, one of the main drivers in the readiness for this mammoth task is the fact that zoos "have moved into a new era of captive breeding, where whole captive populations can be managed as a whole", by digital computer softwares like Species360 (Bostock, 1993, p. 144). As mentioned before[21], this milestone allows for much healthier populations that are as healthy and as fit for re-introduction as they can be. The management of these more modern zoos aiming at conserving species as well uses every arrow in the quiver available as mentioned already. In addition to the usual suspects of natural breeding (similar to the wild), artificial insemination (the standard practice in industrial farming), and double clutching (where the laying of a second clutch is provoked by snatching the first and doubling the outcome because of artificial incubation of the first clutch) "other breeding technology, such as the development of sperm and egg storage, fertilisation in vitro, embryo transplantation and the like, can all be seen as part of a total armoury of weapons which it is good to have available if necessary" (Bostock, 1993, p. 145).

Knowing though that at present, "zoos seldom participate in species or habitat restoration" it becomes clear that the need for them "to become proactive conservation organizations and engines of conservation are logical and inspiring roles for zoos in the 21st century" (Conway, 2000, p. 9 & 13). And with their ability to conserve species at least by means of breeding, one has to look at what this breeding and conserving could lead to. Those animals preserved could "be reintroduced either to refound an extinct population or to strengthen a threatened one" (Bostock, 1993, p. 141). It cannot be stretched enough though that for conservation efforts to be fruitful, they have to conserve more than the looks of the animals threatened. The phenotype, the animals' outward appearance, is just as important as what I have called soft factors, like the animals' behavioural skills and cultural traits. Two prime examples for this culture being tool-use and migratory behaviour.

[21] See 2.4.1.

Also one has to bare in mind that if humans are to actually save “any particular animal species as part of its ecosystem, we conserve not just the species itself but its way of life, and do not disturb its links with other parts of its ecosystem” (Bostock, 1993, p. 140). This has to be the first step as it is uncertain just “how far we can conserve species properly outside their ecosystems. So obviously we should conserve ecosystems by preference” (Bostock, 1993, p. 140). There should be no doubt in my argument, zoos and the conservation of animal species within them, should only ever be the plan b to fall back on.

What has to be made clear is that species do not simply go extinct. In the vast majority of cases, the culprit can be named. And if action is not taken to conserve these species, they are not *going* extinct, but are *being* extinct. And that makes it a human liability and responsibility to prevent. This conservation will even, perhaps especially be our responsibility if our own survival depends on it as well as “maintaining a life-sustaining and life-fulfilling planet for humans and other species are thus one and the same challenge—a challenge that cannot be met by business as usual” (Díaz, et al., 2019).

And there are fairly straight-forward reasons for conserving nature’s diversity: “The conservation of the remaining natural ecosystems remains the most important focus to safeguard biodiversity, but the large-scale restoration of ecosystems is seen as pivotal to limiting both climate change and species extinction” (Strassburg, et al., 2020, p. 724).

The take-home message of my conservation oriented arguments is that conservation in zoos should not happen for the sake of zoos, but for the sake of conservation and there being no alternative to it other than allowing animal species to vanish from the face of the Earth. And conservation of wild species should always, and has to always be conservation of wild spaces too. With this in mind, zoos can function as an extended arm of nature.

2.4.4 Applying the Arguments to the Zoo of the Future

I share the idea that “reintroduction is the proper end point of conservation breeding” (Tudge, 1991, p. 244). Even if fighting for reintroduction is an on-going struggle, it should be the

main goal of conservation breeding in zoos. As I have shown, at present the conservation breeding in zoos is conserving zoos really, not species in their natural habitat. But zoos should do just that, breed animals for reintroduction whilst simultaneously raising awareness for and leading by example in their fight to save the shrinking natural habitats of the animals within their vicinities.

But at present, this last morally legitimate pillar of the zoo, saving animal species from likely extinction, is only barely sturdy. There are excellent examples of conservation efforts that saved species from extinction without zoos playing a major role in them, or any role for that matter. The Californian condor (*Gymnogyps californianus*)[22], kakapo (*Strigops habroptilus*) from New Zealand[23], batagur or Burmese roofed turtle (*Batagur trivittata*)[24], and Sumatran rhino (*Dicerorhinus sumatrensis*) in the Sumatran Rhino Sanctuary in Way Kamaba Nationalpark on Sumatra[25] are just a few of those candidate species whose last hope is in conservation efforts, not zoological gardens fiddling around with breeding programmes.

Another good example of successful wildlife conservation without any zoo work involved is that of wildlife tourism in some areas of the world. This is a double-edged sword, however. Wildlife tourism is being criticized a lot by scientists as deeply "unethical" and exploitative in many instances (Moorhouse et al. 2016; Fennell 2015; Fennell, 2012) and what constitutes sustainable ecotourism is being debated (see the contributions in Bertella, ed. 2021). Given that the tourism saving endangered species needs for example infrastructure destroying the previously untouched natural habitat of just those animals, we need to be careful with advocating ecotourism in general. But successful examples and advantages surely exist. The prime example for conservation success coupled with ecotourism is the one of the mountain gorilla (*Gorilla beringei beringei*). Although there have been a hand full of individuals in captivity, the last European zoo to house two individuals that passed away in 1978 was Cologne zoo (Pagel & Spieß, 2011). With no members of the species having been in captivity in almost half a century, it is astonishing to see that whilst not flourishing, the species appears

[22] See (Boorstin, 2019).
[23] See (Department of Conservation - Te Papa Atawhai, 2019).
[24] See (Nuwer, 2020).
[25] See (Save the Rhino, 2020).

to at least be safeguarded[26]. This conservation happens by means of effective political cooperation between neighbouring countries in the Virunga area and is surely due to a general shift in societies' awareness of human relatedness and responsibility when it comes to our next evolutionary kin, the great apes. But it is also due to the means of eco-tourism elevating the value of a living gorilla for tourists over the value of a dead one for the bush meat trade (see Benz-Schwarzburg & Benz 2012, Benz-Schwarzburg 2011).

In their profitability for ecotourism lies hope for this rare species counting less than 1.000 individuals without any spare population outside of Rwanda and Uganda. In a way, the experience of visiting these gorilla groups, mainly done by European or North American tourists capable of paying the extra dollar, is offering these primates something of a sustainability (Wustmans, 2015, p. 39). What it also does is turn this observation of mountain gorillas in their natural habitat from an experience of nature into a sensitisation of the understanding of nature (Wustmans, 2015, p. 40).

Undoubtedly what wildlife eco-tourism does for the critically endangered mountain gorillas is creating money needed to make conservation a worthwhile exercise and simultaneously pay the costs for conservation too. If zoos exist (and they undoubtedly will continue to exist, although maybe in lesser numbers) they could at least contribute much more to conservation fund raising. At present, there are only shy of a dozen zoos that have implemented the concept of the *Artenschutz-Euro* in Germany[27], adding, or allowing to add, one Euro to every entrance ticket bought at the gates that is to go into conservation efforts. But without a doubt, this measly participation in conservation efforts is still lacking the bang, the economic strength needed to provide for adequate conservation in the field. One Euro of a Ticket that costs 24 EUR for adults and 14 still for children[28] might be too little compared to the ethical vision to make conservation the main incentive of the zoo and the main reason why visitors go there.

[26] According to the IUCN Red List even increasing steadily.
[27] Amongst them the one in Leipzig, Stuttgart, Hannover, Dresden, Heidelberg, Karlsruhe, Nordhorn, Augsburg, and Marlow.
[28] Current entrance fees at zoo Schönbrunn, Vienna (https://www.zoovienna.at/besuch-und-tickets/besucherinformation/#tickets-und-preise).

It is clear that zoos, however, need to actually do much more than raising funds for conservation. I consider myself a zoo critic not because I am against them *summa summarum*, but because I believe in the institutions capabilities to become, grow, and mature into what it should ultimately be: an epicentre for species conservation. A conservation of species that should have a low-threshold and should be inclusive. In the past, however unfortunate, some "excellent zoological societies with exemplary conservation records have sometimes appeared to the world at large not as public institutions, but as private clubs" (Tudge, 1991, p. 247). Turning an arrogant blind eye towards endeavours like citizen science[29] is unnecessary too. For "amateurs by definition *are* 'the people'; by engaging them, the gap between the pro and the public at large is bridged at a stroke. For all these reasons, many 'pros' now feel that the 'resource' of the hobbyist and the breeder should be tapped far more diligently" (Tudge, 1991, p. 248). Still, zoo staff and thus the professionals working at zoos need to be engaged in conservation effort precisely because conservation *is* the main reason for zoos to exist.

Increasing efforts *in-situ* will be paramount but conserving endangered species (and only endangered species) *ex-situ* is also important. Tudge argues that "populations *in situ* are highly desirable – necessary, indeed – but it also makes sense to keep other populations elsewhere" (Tudge, 1991, p. 244). As I pointed out before, habitat fragmentation and loss through human activities are amongst the strongest drivers for species extinction. But with time, perhaps centuries of time, and "in conservation we must think in centuries – the human population might again begin to diminish, so modern demographic theory suggests. When it does, reintroduction can begin *en masse*. But it cannot begin at all, unless we save the animals now" (Tudge, 1991, p. 3). This might be a formulation too optimistic coming from times when climate change had not been recognised, yet, as the driver it actually is. Still, I would argue in favour of not giving up hope. We should indeed strive for a better future that ideally includes the restoration of habitats, ready for reintroduction of threatened species.

This is what makes *ex-situ* populations an almost mandatory evil. What we can do is always keeping in mind that it is still an evil, an emergency measure, something we in principle do

[29] Citizen science is the idea that non-professionals from outside of the exact scientific field can help on scientific projects (Gura, 2013).

not consider as an ethical solution. Such a self-understanding would make us modest und force us to listen to criticism instead of believing we can relax and feel fine with how it is. This is important because considering lesser evils or better alternatives and compromises is a main task for a society that sees zoos in a critical light. With reintroduction being the goal, "drive-through parks, for example, are the lesser of two evils" (Zamir, 2007, p. 133). Such parks would include only those endangered animals, living in much bigger enclosures and therefore already lightening the burden of constricted enclosure size, as they would have to be of much larger scale to fit the human modes of transport into the enclosures. With the animals' infringements partially at bay "allowing visitors to watch them as a form of education or amusement and thus obtaining partial funding for these enterprises is morally permissible, since the paternalism on which these institutions are predicated is of the right kind" (Zamir, 2007, p. 133).

One aspect of captive population management that cannot be underestimated though is the one of potential inbreeding depression and therefore worsening of genetic make-up occurring. As a rule of thumb, one can say that the smaller a population, the weaker the selection within that population, and the stronger the genetic drift. Genetic drift refers to the random change of allele frequencies from one generation to the next (based on random sampling of genes from the parents to produce the offspring generation) (Chapman et al., 2009). This ultimately leads to a mutational meltdown in which a decrease in overall fitness of the individuals can be observed that will, eventually, lead to a decline in population size and quality.

Without wanting to delve too deep into conservation genetics, it is important to understand the concept of inbreeding depression. Inbreeding causes a decrease in heterozygosity and increase in homozygosity, thereby reducing the fitness of offspring and a population (Chapman et al., 2009). The long-term consequence of small populations therefore is a loss of adaptability to changing environments, and the short term consequence is inbreeding depression. In order to keep inbreeding at bay, one can easily determine an individual's inbreeding coefficient if its ancestry is known for a few generations, as is the case with many zoo animals today. A high inbreeding coefficient is equivalent to a high loss of favourable heterozygosity.

Two very important concepts within conservation genetics are the one of effective and numerical population size. Whilst the effective population size refers to the size of an idealised population in terms of its genetic make-up, the numerical population size refers to the actual numerical count of a population without taking its genetic quality into account. With most populations of endangered animals within zoos monitored closely, and some of them organised in European or global breeding programmes, one has a very good idea of both, the numerical, but also the effective population size. And whilst with some animals, one might think that their population seems to be quite stable given that it may count a few hundred individuals, the effective population size, especially when there were only a few founding individuals as is the case with many zoo populations, might be dwindling small.

The standard theory about the consequences for population sizes with regards to their genetic make-up was established by Australian geneticist Ian Franklin 40 years ago and is called the "50/500-rule" (Franklin, I. R., 1980). It states that a population needs an effective population size of at least 50 unrelated individuals to avoid inbreeding depression in the short run and an effective population size of at least 500 unrelated individuals to maintain adaptive potential ensuring its survival in the long run. It does make sense to repeat this point: the smaller a population, the weaker its selection and the stronger its chances for drifts towards unhealthy genetic mutations.

With this concept in mind, one has to face the fact that most zoo populations, especially those of the charismatic megafauna are not strong enough, not large enough in their effective population size to maintain healthy populations in captivity. This is especially the case for those populations that will not see any kind of boost of fresh blood, fresh genes from other for example wild individuals. With regards to the hard science of conservation genetics, one cannot dispute the fact that even closely monitored and globally managed captive populations decrease in genetic quality from one generation to the next if they are neither strong enough in terms of both efficient as well as numeric size, nor see any new genetic material feeding into the population from outside of it. This is the reason why any status quo of a small gene pool open to new genes is immeasurably more valuable in terms of genetic quality than any living population with a small gene pool closed to new genes is.

For the zoo, this has a number of implications. Firstly, it means that we either have to start conservation breeding early enough, whilst gene diversity is still no problem, and if any possible with several groups starting from different gene pools (but this is already too late for many zoo populations). Secondly, we also needed to bring in more wild animals from time to time (but this is ethically contested and strictly regulated by CITES: welfare of wild catches might be severely compromised plus zoos are then contributing to the disruption of already dwindling populations in the wild, a historic guilt they already carry along). Thirdly, we need to face the fact that conserving, with all strength and resources available, small but genetically vital populations in the wild might indeed be the better path than concentrating on the continued breeding of populations threatened by inbreeding depression.

This is planning for the future. But it is, as Bostock points out, also "very important that we be equally concerned about the immediate situation, however seriously we take the nightmare future threats" (Bostock, 1993, p. 141). After all, what zoos tell people right now might severely impact the options we have later. There are sound reasons to "object to zoos' captive breeding as a tool for conservation on the grounds that it may make people think there is no need to conserve habitats, because zoos are looking after the actual species" (Bostock, 1993, p. 141). Zoos, however, cannot think like this and must, much rather, "make clear they don't by stressing that the special help they can offer the cause of conservation, that of captive breeding and possible reintroduction, is by no means a distraction from or in any way counter to the interests of habitat protection" (Bostock, 1993, p. 141). This is so very mandatory as any "reintroduction operations themselves direct attention to maintaining, indeed restoring, the wild habitat, for reintroductions are pointless unless the habitat is there" (Bostock, 1993, p. 141). This means, in case we stick to conservation breeding in the zoo, that raising awareness for conservation efforts outside the zoo, including the preservation of natural habitats, must be the main focus.

2.5 Ethical Arguments Beyond Welfare and Conservation

In this section, I will benchmark the status of zoo animals. I will consider arguments for and against the importance of zoo conservation and continue to outline what could justify the zoo's continued existence. I will expand on and analyse, discuss, and contextualise the

arguments beyond animal welfare and conservation. Finally, I will bring together the three lines of argumentation, reaching a clearer picture of the zooture still.

2.5.1 An Introduction to Ethical Arguments Beyond Welfare and Conservation

With the concept of conservation and its importance for the legitimacy of the zoos in mind, let us now look at those arguments reaching beyond sheer welfare and conservation in the next section. These arguments, which I will refer to as ethical arguments beyond welfare and conservation, concern the changing human-animal-relationship and therefore encompass species and individual, human and non-human. They encompass five aspects of which I will mention the first two only briefly and go into more detail regarding the rest: the moral status of non-human animals, their rights, the changing relationship humans have towards non-human animals, the justification of potential suffering, and the objectification of non-human animals in the zoo.

In this thesis, I take all animals into account and grant them a moral status *a priori* in the sense that they deserve moral consideration. *What kind* of moral consideration they deserve or *how strong* their moral standing is, varies, however, depending on the ethical account one adopts. Furthermore, the respective *criteria for moral consideration* also vary according to ethical theory: anthropocentrism argues with reference to being a human or a human person; pathocentrism, instead, emphasizes the ability to suffer; biocentrism on the other hand turns to being alive as the core criterion for moral consideration, whereas mere existence is enough to grant moral standing in holism (see Benz-Schwarzburg 2020, p. 175 ff. with reference to Gorke, 2000). For I am interested in the moral status of all sentient non-human animals I will leave aside the anthropocentric stance (that only grants moral standing to humans or human persons).

Let us depart from a pathocentric perspective. One crucial line of argument here is that it is not the ability to speak or think rationally, which are brought forward oftentimes, but the ability to feel and suffer. This thought was first introduced by Jeremy Bentham who stated with regard to animals that “the question is not, Can they reason? nor Can they talk? but Can they suffer?“ (Bentham, 1967, p. 411). Prominent animal ethicists today still build on this idea (Bossert, 2015, p. 19). Peter Singer, for example, emphasises sentience and suffering a

lot in his account: “if a being suffers there can be no moral justification for refusing to take that suffering into consideration“ (Singer, 2002, p. 8). What is important to note here is that animal ethics thus understood it is less about similar rights, but about equal consideration of suffering instead (Singer, 2002, p. 2).

Preference utilitarians like Singer judge “actions, not by their tendency to maximise pleasure or minimise pain, but by the extent to which they accord with the preferences of any beings affected by the action or its consequences” (Singer, 1999, p. 94). A question remains, which preferences are of interest with regards to zoo animals, for example the preference not to be in captivity. It is sometimes not so clear what the animals’ preferences are, although welfare science these days has methods to assess preferences in animals. In the case of zoos, however, we know from welfare research in zoo animals that their preferences are in many instances impacted by capacity. This also applies to social preferences (for relationships and interactions with specific others’), preferences for movement, food and feeding times, resting regimes etc. After all, in a zoo environment the animals can rarely chose according to their preferences, everything is organised by human caretakers.

We should bear in mind that for the animals at the zoo, or their ancestors, everything started with capturing them in “their native habitats, transporting them great distances and keeping them in alien environments in which their liberty is severely restricted” (Jamieson, 2006, p. 133). And without the shadow of a doubt, from a philosophical perspective “in being taken from the wild and confined in zoos, animals are deprived of a great many goods” (Jamieson, 2006, p. 133). “Gathering their own food, developing their own social orders and generally behaving in ways that are natural to them” are some of those goods to name only a few (Jamieson, 2006, p. 133). Thus, the debate on zoo animal welfare links with philosophical ideas on natural behaviour, freedom of activity and choice and ideas of leading a good life.

But also scientists assume that so-called enrichment increases wellbeing because it offers the animals choices and a wide range of stimuli that are preferable to an otherwise stimuli-reduced and barren environment. As zoo animals usually accept and use enrichment we can safely assume that they prefer an enriched environment to a non-enriched one. The entire

enrichment debate can be seen as a contribution to better meet the animals' needs and preferences in captivity and it is a debate that is considered of importance and relevance, not just by zoo critical ethicists but also by the zoo community itself. Still, the individual preferences might not be the only preference to take into account when applying preference utilitarianism to the case of zoo animals. Perhaps it is necessary to go a step further than utilitarians would normally go and say that species as such have intrinsic value, a value of its own, not just the individuals belonging to that species (Bossert, 2015, p. 24).

When discussing them from a utilitarian point of view, "the interests of animals must figure in the moral assessment of zoos", an idea that also animal rights philosophers like Tom Regan stresses (Regan, 1995, p. 41). Naturally, "these interests include a variety of needs, desires, and preferences, including, for example, the interest wild animals have in freedom of movement" (Regan, 1995, p. 41). Regan argues that animals who are subjects-of-a-life because of such abilities and needs should be afforded animal rights.

Regarding zoos, animal rights ethics ask whether we as humans are even allowed to keep non-human animals in captivity. Their right to be respected as subjects-of-a-life might have an impact upon the reasonability to keep them in captivity. Rights philosophers doubt that animals as subjects of a life can be respected sufficiently in their complex capacities and needs in zoo captivity (Regan, 1995; Benz-Schwarzburg, 2020). Moreover, would a singular individual happily accept to be incarcerated for the good of its species? If preferences play a role in ethics, and both, utilitarianism as well as rights philosophy suggest so, we should consider that zoo animals' preferences run against captivity. Maybe they would even perceive it as unfair or unjust to be put into cages for the sake of others who are allowed to live a free life? After all, some animals do in fact possess a sense of fairness, as I will show by a case example in the following.

Many people, not only those interested in ethology, the study of animal behaviour, might have seen the fascinating and at times ridiculously funny test on two tufted capuchin monkeys (*Sapajus apella*) carried out under the supervision of Dutch primatologist and ethologist Frans

de Waal. In this test[30], two monkeys in adjacent testing compartments are given the same task, to exchange an item from within their compartment with a reward from the human experimenter. Upon success, the non-human participant is given a reward for the exchange. Whilst one of the two monkeys receives a slice of cucumber and happily accepts it at first, the other receives a sweet grape (what in the tufted capuchin monkey world must be higher rated) and happily munches away on it. Asked to redo the task, the cucumber-awarded monkey throws a right little tantrum when rewarded, yet again, with a cucumber rather than a grape. What looks hilarious from afar might just give us a grasp of a side effect of the experiment that was aiming at increasing our knowledge of moral understanding within the animal kingdom. It appears that this capuchin monkey has a sense of fairness, a sense of justice or at least inequity aversion. And if this monkey does indeed have an idea of what is fair and unfair, how can we justify keeping some of his conspecifics and relatives in captivity for the sake of its species, and not reflect on whether or not the incarcerated individuals might have thoughts about the justification for this treatment?

Even if one were to go less far than some philosophers like Peter Singer and Paola Cavalieri (1995) do who demand rights for animals that are quite comparable to those humans have, namely a right to life, to freedom and not to be tortured, the animals' interests and preferences need to be taken into consideration. And then it is more than debatable that if one is to grant animals some rights, duties towards them are entailed that would make their captivity unethical. These calls for rights are but another indicator of the changing relationship humans have to non-human animals. When it comes to zoos, however, a thing that has changed very little over the past decades, even centuries, is that "looking at animals is [still] considered desirable and pleasurable in Western society" (Franklin, 1999, p. 62). This could of course be explained with an uncanny disinterest in the average zoo-goer with regards to our growing knowledge about animals, their abilities, needs and welfare.

What has once been frowned upon by the majority is finding more and more traction these days, the thought or idea that we might, in fact, be "ethically confronted by various levels of organic individuality and community, various levels of worldly activity and suffering, and

[30] See (de Waal, 2011).

various forms of active life (human and other) intrinsically valuable“ (Donnelley, 1995, p. 26). And with this growing acceptance comes a growing understanding that “human moral responsibility must finally comprehend the full range of organic, animal, and human existence“ (Donnelley, 1995, p. 26). This general change in human-animal relationship is mirrored by the scientific and ethical debate on zoos. With regards to morals, we clearly “need to understand morally significant differences amidst morally significant similarities or commonalities“ (Donnelley, 1995, p. 21).

In the end, it is not only the size of enclosure that is under debate, but also the rights and entitlements of the beings kept within the artificial environments of zoos. Bostock states that “we must justify keeping animals by showing the degree to which our keeping of them is in their interest” (Bostock, 1993, p. 169). We need to connect our understanding of the animals’ interests with their living conditions in captivity. The quality of artificial habitat is maybe less important than the question to what extent these artificial living conditions restrict their interest, most important their potential interest in freedom. For some philosophers this is the core question: no matter how “good the environment provided for the animals, it is a morally illegitimate institution because it infringes their [the animals’] right of freedom“ (Garner, 2005, p. 142). In humans, at least, it seems that taking away someone’s right to freedom is a heavy infringement: we don’t do that lightly and need solid ethical argumentation.

The question seems then, what is gained by putting that burden on the individual animals. Is there such a huge advantage to us, to the species, to individual animals that it is worth the costs? It is a fair point to say that the very “morality of keeping wild animals” even under best conditions, “is nevertheless questionable, given that so little of human life depends on it“ (Scruton, 2000, p. 98-99). This brings us back to the aforementioned point that “zoos are an immoral enterprise because they exploit and abuse living creatures for the entertainment of the crowd, and in so doing cause and perpetuate immeasurable suffering” (Fa et al., 2011, p. 70). Entertainment, however is a weak reason to put the burden of captivity on the animals and not respect their right to freedom as animal rights philosophers might argue, or, in the weaker wording of utilitarian welfare ethics, to override their preferences and interests. At least some zoo directors do agree: Ron Kagan, the director of the Detroit Zoo, said that “our

amusement and selfish, albeit often well-meaning, desire to be close to other species isn't enough to justify their life-long frustration" (Brulliard, 2016). This links with the demands philosophers would apply as a standard of justifying zoos. When humans want to continue "keeping animals in zoos, it must be because there are some important benefits that can be obtained only by doing so", ideally for both sides (Jamieson, 2006, p. 133). Others agree: from a utilitarian perspective "we have no way of estimating the value of a practice or an institution except through its contribution to the total good of those involved" (Scruton, 2000, p. 87). This necessarily includes the consideration of the perspective of the animals, too.

As we have seen, both versions of what "the animals' perspective" could mean at the zoo are troubled: the perspective of the individual animal is troubled by welfare issues, the perspective of the species is troubled by largely unsuccessful and ineffective conservation measurements for which more successful alternatives exist, by disappointing conservation education and pathetic overall numbers in raising funds for conservation. The present state, zoo critics believe, "still ultimately disappoints" in providing us convincing reasons for their existence that include substantial gains and goods for the animals themselves (Rothfels, 2002, p. 11).

So no matter how much zoos have changed over the course of the past decades, the concept, Goldner (2015) claims, still is the same. To critics like him, zoos are and will remain to be what they have always been and what they are in essence: Prisons for wild animals where the imprisoned are displayed to a paying public in perpetuity (Rosenplänter, 2019). Malamud summarises even more bluntly that zoos "are prisons for kidnapped, alienated, tortured specimens who are forced to live their lives in vastly unsuitable compounds for the titillation of ignorant crowds brought in by marketing and advertising campaigns that promise highbrow ecological experiences but actually pander to audiences' less noble cravings for amusement parks, or even freakshows" (Malamud, 2017, p. 397).

This naturally entails more negative aspects mainly the one that "captivity is degrading" as Buenos Aires Major Horacio Rodríguez Larreta who closed down his city's zoo said, and that the zoo the way it is "generates more sadness than happiness" (Brulliard, 2016). The idea that

zoos are degrading points us to dimensions of criticism that reach beyond welfare and conservation, the ones addressing the topic of objectification of the non-human inhabitants in zoos. Given the fact that most zoos heavily depend on the revenue brought in by paying visitors, there is for sure a great danger of the non-human animals being degraded to little more than consumer goods, commodities, due to greed for profit. Unfortunately, this objectification appears to resonate most in one of the two zoo trends I will touch upon soon.

For now, we can clearly see that those supporting the present state of the zoo, especially the big associations, acknowledge the fact that these animals serve as ambassadors for all their conspecifics, even nature as a whole (EAZA, 2019, VdZ, 2020). According to some, the raising of awareness for the threats these animals are exposed to in the wild is to make the human visitors rethink their behaviour and the way they treat the natural world (Nogge, 1998, p. 452). While this is an ideal current zoos obviously struggle to achieve, it was established as a main ideal of the modern zoo. As such it bares relevance for the zoo of the future as well.

2.5.2 Analysis, Discussion and Contextualisation of Arguments

2.5.2.1 Drifting towards Disneyisation

So far, we have concentrated exclusively on welfare and conservation as ethical norms guiding zoo ethics. Large parts of argumentation in the debate seemed to thereby follow a utilitarian point of view, weighing up interests of individual captive animals against the greater good of conservation of their species or even other affected species, including humans. The question, however, is whether other philosophical perspectives are of relevance as well when it comes to zoos. The fact that rights philosophers (as I have introduced) usually arrive at a much more critical verdict on zoos than utilitarian welfarists points us to the necessity to dig a bit deeper.

As pointed out previously, there are scholars who claim that zoo animals function as ambassadors for their species and those conspecifics in the wild, or even as ambassadors for the entire eco system their wild conspecifics are a part of (Nogge, 1998, p. 452). In this way, their interests as subjects are subordinate. This is weird to some extent because it is the

individual animal we encounter in the enclosure. It can also be said that "the project of naming, identifying, recording, and tracking zoo animals" leads, at least to some extent, to them being very much seen as subjects (Braverman, 2012, p. 119). The act of looking at animals that has been termed "zooveilance" is marked by the typical aspects of surveillance, involving "motions of care, stewardship and conservation" (Braverman, 2012, p. 119) and those, again are very much linked to individual relationships. A true recognition of animals as subjects, however, certainly only occurs when those animals on display turn from *something* into *someone*. This, one could argue, is mostly the case when those individuals precisely become more than mere ambassadors for their entire species, when they are seen, displayed, and even loved as individuals, when they are named and, above all, respected in their individual welfare, needs and rights. Note, that recognition as a subject is construed in the attitude of the observer and it surely depends on the knowledge we have about the subject in front of us (only if we recognise what she is like and what she needs we can truly appreciate her as the subject she is). Still, there is also an important emotional component involved in recognising someone as a subject (turning to someone as a subject is also an act of caring about that very individual, it is an act of empathic concern). Thus, it may even be "that zoo visitors as a whole are not well informed about animals, that they have false ideas about them, but they apparently care about them and about their interests very highly, and appreciate them as individual living beings" (Bostock, 1993, p. 174). The question is whether the recognition of the animals as subjects is supported by their representation in zoos or whether it is overlaid by an objectifying role the animal plays.

It seems to me that the objectifying role of the individual animals is very much emphasised by different processes at the zoo. For example, naming (while being an act of ascribing subjectivity to an animals) is often objectification. Zoo animals are often annotated with names that appear to strike a tune with the tongues of their places of origin, which in turn objectifies them again as ambassadors for a species from a foreign country or continent. Another example for a process that distorts the representation of zoo animals as subjects is the artificiality they are embedded in. No matter whether zoo architecture consists of concrete where the animals would naturally roam icebergs or whether it consists of a qualified jungle that looks like rain forest to the visitors eye but in fact contains soil and fauna far away from

the animals natural habitat: the architecture represents the animal subjects as subjects that have been taken out of their place and context. And this in turn entails a danger, that "while zoos, aquaria, and wildlife parks do beneficial work for human environment relations, they can also represent animals and ecosystems in complicated and unrealistic ways" consequently doing nature a disservice (Adams, 2013, p. 427). In line with this is the idea that "zoos teach us a false sense of our place in the natural order. The means of confinement mark a difference between humans and animals" (Jamieson, 2006, p. 142), one that tells us it is ok to confine and display animals, to dislocate and de-contextualise them the way described, whereas the same is not ok for humans (anymore). The ultimate message is: animals and humans are very different from each other, certainly in their moral standing and the treatment they deserve.

This disservice is greatly shaped by the fact that visitors, on the one hand, appear to be interested in seeing "wild" animals, "at best active, performing, roaring ones" (Ludwig, 1981, p. 315). On the other hand, they seek this encounter under 'unwild' and artificial conditions where they themselves are safe and comfortable, where they don't have to patiently endure humidity, extreme temperatures, or insect bites while waiting in the mud or behind bushes until they finally see an animal that would naturally hide away. The problem is, of course, "they cannot have it both ways, at least with respect to most animals" (Ludwig, 1981, p. 315). With trying to fulfil their own expectations then, visitors on purpose, or as a side effect are likely to "demean the animals and rob them of the respect they deserve" that is the respect we owe them as the wild animal subjects they are (Ludwig, 1981, p. 314). This unfortunately is exacerbated by the argument coming from zoo critics that going to the zoo motivated by an initial (uninformed but still empathic) concern for animals turns into something else. They argue that in the end it is hardly any understanding and empathy for nature that is conveyed at zoos because those creatures within are displayed as caricatures and clichés of themselves leading to false images of wild animals by the uncritical zoo-goer (Rosenplänter, 2019).

This also results in their ontological status being more biotic artefact than wild creature (Lee 2005). The problem that animals are being rendered into something other than they are is important from a broader philosophical perspective as it adds momentum and meaning to the idea of animals being objectified in certain ways at the zoo. As such it ties in with a zoo

critical perspective that points us to specific trends zoos have been undergoing that are ethically problematic, also, because they question the zoos' main narrative that they are predominantly there for conservation and education.

According to Beardsworth & Bryman postmodern zoos undergo a trend they call disneyisation. Disneyisation plays a role on four principal modes of engagement of the zoo visitor with the animals, namely the modes of encounter; representation; presentation and quasification. The encounter refers to the physical presence of the animal, allowing it to "be perceived via one or more of the senses" (Beardsworth & Bryman, 2001, p. 85). The aspect of representation leads to an obscure and biased way of looking at animals in a way that viewers "come to dominate the ways in which the 'wild' is construed in contemporary cultures" (Beardsworth & Bryman, 2001, p. 86). The representation, which can often be seen in character traits attributed to the zoo animals on display, differs from the aspect of the presentation in that the latter is direct, rather than indirect. The presentation refers to the fact that "the animal is not unrestrained in a 'natural' setting, but is held captive and presented for viewing by its captors" (Beardsworth & Bryman, 2001, p. 87). Lastly, the quasification describes the creation of a fake experience, one where "the intention is that the viewer should be 'in on the joke', and hence be diverted, entertained and impressed by the skill, scope or scale of the artifice" (Beardsworth & Bryman, 2001, p. 87). These four modes of encounter are often times interlinked in the idea of disneyisation. Four interlinked features, which we can all easily find in nowadays zoos, define Disneyisation: theming, dedifferentiation of consumption, merchandising, and emotional labour. Theming means that zoos follow a main theme on the institutional level that I have already identified as the conservation theme (see also Carr & Cohen). On the micro-level of zoo architecture we can find theming in the design of enclosures and consumption possibilities. You can for example, meander through an African Savannah, book a safari tour, play on a jungle playground and eat at the Safari lodge. The African Savannah here becomes a theme world the visitor can immerse herself into. By dedifferentiation of consumption, Beardsworth and Bryman mean that usually separate consumption areas merge into one another (learning something about the animals and their conservation is mixed up with a consumptive attitude when taking a guided tour is accompanied by shopping in quite extensive zoo shops and having dinners, cocktail parties or

even wedding ceremonies in themed cafés and restaurants. Merchandising, the third disneyisation criterion, describes precisely the growing investment in advertisement, whereby the zoo animals themselves, especially charismatic or hand-reared (baby) animals who cause media attraction, are being transformed into merchandising. Lastly, the animals perform emotional labour by entertaining us in ways that make us laugh (such elements can be found in shows where the zoo animals give kisses to the keepers or wave at the audience) (Beardsworth & Bryman 2001; Benz-Schwarzburg 2020, p. 293-301; Benz-Schwarzburg & Leitsberger 2015).

Many examples I gave already, like theming in form of conservation as a master narrative, the quasification of zoo architecture as something matching the zoo visitors' idea of nature, and the use of blockbuster animals functioning as merchandising products all fit the disneyisation critique.

In general it can be argued that all those developments objectify zoo animals for human entertainment interests. Conservation thus becomes secondary at best. At worst it serves as a disguise for other motifs. Animals live in quasified settings, are turned into objects to be gazed at, to be visually consumed. The zoo experience therefore is turned into one of consumption and entertainment rather than education, troubled by the fact that it is the powerful (humans) who object the powerless (animals) to their surveillance and their visual consumption. In this sense, power and gaze are linked with each other in a problematic way at the zoo (Beardsworth & Bryman 2001, p. 88).

In this objectification in disneyisation, the animal directly becomes a product when used in a show, and in addition to this, becomes a product indirectly when any kind of merchandising refers to ideas we have on animals. Furthermore, one can discuss how even in this indirect objectification the animal is means (advertising medium) to the purpose (increase in profits) and, as advertising message part of the product sold (Benz-Schwarzburg & Leitsberger, 2015, p. 26). With anthropomorphic and sentimental expectations towards the animals capitalised and marketed, the commodification most likely transports wrong messages about the animals

and natural habitats addressed (Benz-Schwarzburg & Leitsberger, 2015, p. 27). This trend of disneyisation will be discussed more thoroughly in the next chapter 2.6.

2.5.2.2 Implications for the Human-Animal-Relationship

With this tricky subject of objectification in mind, let us now consider the next aspect of arguments previously introduced, the ones concerning the moral status and rights of zoo animals.

The moral status is especially hazy with regards to those species whose members might be considered to be what many refer to as “virtual persons, though we tend to restrict the concept of personhood to humans. Many are at least individuals. Some non-human animals have personal relations with us, and many must have rather similar relationships with each other” (Bostock, 1993, p. 134). The consideration of the moral status and rights are “not merely reasons why animals are of value to us as remarkable ‘furniture’ of our world; they are reasons why animals are of value to themselves” (Bostock, 1993, p. 135). An acknowledgement of other animals having a moral status similar to that of us humans would lead to us humans seeing other non-human animals mattering also “from their own point of view because of their capacity for pleasure and satisfaction” (Bostock, 1993, p. 136).

When considering the moral status of animals in the realm of wildlife conservation, the acknowledgement of a moral status is important not only for the individual animal concerned but all its descendants, too, given that "their own and their descendants’ future happiness” are “reason for conserving them” (Bostock, 1993, p. 136). This brings us to the next point that needs consideration. The rights and their potential violations when it comes to wildlife conservation. Let us have a look at the quite exclusive human community of equals that have claimed their own rights over the past centuries or decades only. Fellow humans differing in skin colour, ethnicity, religion, gender, or religious belief fought hard for their rights and have so far in many cases only partially won this unfavourable but much needed battle. If we were to look at any group now and take a look at what made the make-up of each and any group similar to the inner circle of moral subjects with intrinsic rights and inherent value, we find

that what we as humans believe to be human might be a certain list of attributes. On top of the list is our self-consciousness, our intellect, our intelligence, our empathy towards others, the ability to understand ourselves as subjects, as distinct entities with a past we learn from, present we are cognisant of experiencing, and a future we plan ahead for, perhaps even religious notions, and culture. It is hard to turn a blind eye to the fact that we find many, if not all of these attributes in many different non-human animals. In addition to this one would also have to point out that the absence of evidence for such characteristics in other species does not amount to the evidence of absence. There should be no doubt that the majority of animal species "are sentient, and many of them must have consciousness or awareness; many must be able to suffer and to experience pleasure" (Bostock, 1993, p. 134).

But then most of the groups that have gained access to this community of equals had powerful advocates that could raise their voice in their own name, or in that of others. And non-humans thus far have been considered mostly as trespassing if anything, as subjects unable to raise their voices in a way we could properly understand. Denying these moral subjects the same rights that we humans have, however, would be as wrong as all other-isms like racism, sexism, chauvinism, anti-Semitism would be. And in this case, the notion in the wrong is dubbed "speciesism". Its core idea is that "humans are more important than nonhumans because they are humans, and therefore, all things being equal, their interests should be preferred" (Zamir, 2007, p. 7).

The reason animal rights are so important beyond considerations regarding conservation arguments or those for animal welfare is that wildlife conservation is very much a broader moral topic. As we have seen, questions of objectification arise, for example. Even if welfare was fine and conservation was successful in terms of re-introduction to the wild, we still might object to keeping animals in zoos for those purposes because we do not want them to be objectified. Despite the shortcomings of some forms of husbandry, there are of course scholars that state that "captivity does not fall under gratuitous or sadistic creation of pain, ergo, it does not constitute cruelty" (Zamir, 2007, p. 129). But cruelty is not the only thing we might want to avoid when dealing with animals. The counter-argument here is that "the rights

of animals are equivalent to those of humans and that it is never acceptable to sacrifice the interests of one animal to benefit another" (Hosey et al., 2013, p. 42).

Despite this ideal, and against better knowledge, it appears that "people are happy to see wildlife conserved when it doesn't inconvenience them in any way, and feelings are more mixed when we have to share space with wildlife and assume the risks that can entail" as Catherine MacDonald, a lecturer in marine conservation at the University of Miami states (Shiffman, 2019). Boiling it down even further, MacDonald says that it all comes down to "whether we're willing to accept some inconvenience and risk in order to live on a wild planet where other species can thrive", making it a moral matter in which rightfulness is to trump convenience (Shiffman, 2019). If she is right, sharing wild spaces with wild animals might be a conflict-laden "inconvenience" (because they occupy natural habitat which we want to continue to exploit for our own purposes, for commercial land use, resource extraction etc.) – but the term suggests that we should start sharing the space and considering their needs because doing so causes inconveniences of little moral weight. The little moral weight is thereby also constituted by the fact that zoo life, on the other hand, might mean more than a mere "inconvenience" for the captive animals. Thus, in a weighing procedure we face on the one hand the humans' interest in a comfortable life, which includes the destruction of natural habitats and thus creates the (self-induced) need for conservation. On the other hand, we face more than mere inconveniences on the animal's side who have to live in a setting where conservation is then realized at the zoo. It is pretty clear how the moral game is situated, put it that way: our convenience is not worth the sacrifice of the animals. Also, well-meant care and conservation seem to be prone to turn into pure paternalism if used as an excuse to override vital interests and rights on the animal side while mitigating mere inconveniences on the human side. Zamir states that violation of certain rights by paternalism, even that of "a welfare-based paternalism with regard to zoo animals is ill-founded" (Zamir, 2007, p. 130). For sure, acknowledging at least some basic rights for animals means to question double standards in assigning and defining rights, e.g. double standards when it comes to human rights in comparison to other animals' rights. Up to now, we surely do things to animals in wildlife conservation and population management, like culling parts of groups or entire groups, we would never do to humans. Framing these strategies as paternalistic seems at least

a warranted perspective for critical scrutiny because they clearly override basic interests of animals (like their interests in life and welfare) without assigning to them the role of an active stakeholder who has a real say in the matter, including in the concrete measurements taken. Alternatives that are less costly (welfare and rights-wise) to the animals but costlier (money-wise) to humans could exists but are not implemented. This exemplifies that "we are making an unjustifiable distinction between humans and animals in adopting so readily the solution of culling for problems of over-expanding animals populations" (Bostock, 1993, p. 148).

All of this points to ethical problems arising from zoos and the idea of wildlife conservation attached to zoos that are much more general and profound than the concrete welfare and conservation issues that dominate the zoo debate. In fact, part of the problems we can see seem to be caused by an ill-founded relationship between humans and other animals, one that puts humans categorically first and animals second. It is questionable whether we can change that by guaranteeing animals' here and there higher welfare standards while the general setting of those in paternalistic power, and those at their mercy and in their care stays untouched. This general setting seems to be one where humans belong to the community of equals, have inviolable rights and should clearly be considered in their basic rights. It is quite far a fetch, but perhaps it is time for mankind to open up the gates of the *hominid*-exclusive circle of the community of equals once more as it has been done most recently for all likes of ethnicity, religion, skin colour, and sexuality. Only a few decades ago, people realised just how far off they were in their secluded pride, ignoring rights of and suppressing people belonging to a different group than white heterosexual protestants, the WASP (for White Anglo-Saxon Protestant). And even if humans are not yet being able to understand what non-human animals might try to tell them, it could be time to fight their battle to be acknowledged as non-human persons. Whilst it cannot be said for sure that most animal species are persons, they might very well be.

When looking at zoos then, one grand change has come about only quite recently. In Berlin zoo, for example, the last *Völkerschau*, the exhibit of people from other parts of the world, took place in 1952 (Rosenplänter, 2019). These days, the so-called civilised world rightfully frowns upon this degrading and inhumane representation of fellow humans but finds it

perfectly normal to pay those a bit further away in terms of phylogeny a visit without any qualms. One of the purposes of these amusement shows was the demarcation of the strange and alien, with one important aspect being a sense of superiority towards those on display. And whilst it is unthinkable to gaze at people from different parts of the world in a way that was thought of as normal only a few decades ago, little has changed for the circumstances animals find themselves in. The presentation and exhibition those animals are part of could be considered just as degrading and even inhumane, for players on either side of the enclosure boundaries. Just as those *Völkerschauen* were in yesteryear's zoo, today's zoo still carries with it the burden of cultural supremacy and is heavily laden with issues of segregation and denigration.

Our relationship to those individuals on or near the outer rim of our moral sphere is a changing one. And with this change in the relationships also comes an understanding of responsibility. Especially towards those consequences linked to our very selfish and irresponsible treatment of all the known species' habitat. There is no sound evidence against it; "the present mass extinction is brought about directly or indirectly by the single species, *Homo sapiens*. To say that we are in control of the extinction would be to flatter us", it is a fact (Tudge, 1991, p. 242). But there is also the idea that whilst "we are the cause, […] we can influence the course of events, by choosing to do some things, and not others" (Tudge, 1991, p. 242). In this way, "the outcome of the present extinction is to some extent dependent upon human will" and of course, our consideration of rights of and duties towards non-human animals and their habitats (Tudge, 1991, p. 242). Thus far, conservation and our role in it might prove to be a vehicle of change given that when it comes to the consideration of rights because of individual animal suffering and death "conservation has been an influential driver of change where animal rights have not" (Fischer & Lamey, 2018, p. 424). Putting these two strategies against each other may be misguided though. They work quite differently from each other. The first operates within the established system and becomes visible in practical implementation steps, whereas the latter aims to change the entire system. It asks for a revolution in philosophical perspectives and aims for a change of attitude, which is more difficult to measure. Still, the increase in conservation efforts over the last decades was probably only possible because people's attitude towards animals has changed dramatically,

influenced also by rights initiatives. Also, some initiatives, like granting rights to great apes, have had significant impact on legislation (Andrews et al., 2018). Instead of putting those strategies against each other let us maybe better see whether they can unfold synergies and support each other in the goal of doing good to animals.

2.5.2.3 Modern Ethics for Modern Zoos

Conservation as a driver has certainly also been more successful in recent years because the relationship between humans and other non-human animals has changed over the past decades and centuries, last but not least due to animal rights initiatives. Zoos should appreciate this turn. With a new and more modern approach to the relationship between conservation and animal rights perspectives, there could be new approaches for a postmodern zoo to live and realise what is already seeing changes in theory. This, foremost, requires an utterly self-critical stance.

With most humans having realised that actual and potential animal suffering need to be taken into consideration, zoos have to ask themselves if and how they can "justify keeping animals by showing the degree to which our keeping of them is in their interest" (Bostock, 1993, p. 169). When considering their interests, profound criticism on zoos should not be ignored but kept in mind. For many, the zoo is an illegitimate institution "because it infringes their [the animals'] right of freedom" and this remains a problem no matter how good the environment provided for the animals is (Garner, 2005, p. 142). Furthermore, with so little of human life depending on it, the "morality of keeping wild animals in these conditions" remains to be questionable (Scruton, 2000, p. 98-99). Critics thus summarise that zoos are immoral as long as they mainly "exploit and abuse living creatures for the entertainment of the crowd, and in so doing cause and perpetuate immeasurable suffering" (Fa et al., 2011, p. 70). We can see that dramatic changes, changes to the very nature of zoos are warranted.

Zoos cannot change dramatically without powerful arguments in favour of that change. I propose to strengthen conservation as an aim that is in the species' as well as in the visitors' interest. At present, it appears that powerful arguments mostly are those from a human perspective and for a human advantage. This point makes it ever so much more important to

”find ways of reconciling conservation with human well-being” (Tudge, 1991, p. 14). With regards to more modern ethics for a more modern zoo this means that “if we have good reason to think any particular animals in a zoo are not in a state of well-being, any instruction or learning resulting from having them will be morally unjustified, because of its dependence on something unjustified – the confining of the animals concerned” (Bostock, 1993, p. 168). The same holds for conservation where animals should only be conserved *ex-situ*, if there is no way of focussing solely on their conservation *in-situ*.

Even if the value of animals conserved was marginal to humankind, there are powerful arguments for conserving the status quo nonetheless. Colin Tudge is a prominent scholar of this view that I believe in myself. From his point of view, “the reason for conserving animals is not simply that they are good for us. It is at least a worthwhile metaphor to regard our fellow creatures as another part of Creation, of which we are the most powerful members” (Tudge, 1991, p. 244). It is important to stretch that “we should conserve animals because we should want to conserve them, and should want to conserve them because it is right to do so” (Tudge, 1991, p. 244). This means that once humans have made the decision to indeed “conserve as many of today’s animals as possible we should, I believe, though without resorting to cruelty, do what is necessary. Not to do so is to be guilty of a sin of omission: and this is no less serious than a straightforward misdemeanour” (Tudge, 1991, p. 27).

There even is a good example within wildlife conservation that is noteworthy in regards to zoo efforts, the one of (great) whale conservation. Adequate conditions of captivity for members of the *Cetacea* are very difficult to imagine. With this realisation in mind, in most European countries[31], as well as “in Britain, unlike the United States, marine mammal parks no longer exist” and they do “not because they are illegal but because people have recognized their ethically problematic nature, and are no longer prepared to patronize them“ (Garner, 2005, p. 140). Still, around the globe many such parks are still operating, especially in China, and advertised in the tourism business. Dolphin Assisted Therapies are created and often serve as a justification strategy. Also, despite a worldwide moratorium, whaling is still happening. It includes coastal whaling, which aims to catch and kill animals for human

[31] In Germany for example, only the zoos in Duisburg and Nuremberg still keep dolphins in captivity.

consumption but also aims to catch animals alive for the dolphinarium industry. All of these practices are highly questionable (see Benz-Schwarzburg 2020, pp. 301-322). And although one could argue that it is an egoistic notion to some degree, "if whales go extinct, the loss will be man's not the whales', who will suffer no more at man's hands" (Bostock, 1993, p. 129). It is noteworthy and a strong argument against the one for conservation in zoos even if most Western zoos lack whales and dolphins whales in their collections. Still, some of the most prosperous and fruitful conservation efforts over the past decades have been those aiming at the conservation of great whales, efforts zoos played no role in whatsoever.

Bearing in mind that I am arguing for wildlife conservation from a holistic approach, it has to be crystal clear that the conservation message of zoos needs to teach the visitors that "animals have a close relationship to their environments, being to different degrees anatomically, physiologically and behaviouristically adapted to them, and forming, along with all the other living beings and non-living materials of those environments, different ecosystems" (Bostock, 1993, p. 132). As such, each and every single species is "not only an enormously complex mechanism; it is part of a complex system, or many systems, according to how we choose to analyse the situation" (Bostock, 1993, p. 132). Getting this point across should stay in the focus of our changing relationship with non-human animals. It should be a key aspect of modern zoo ethics and thus of the aims of a postmodern zoo.

One has to face the fact that "animals in zoos […] have never been more enmeshed in compulsory reproductive bio politics than they are in the twenty-first century" (Haraway, 2008, p. 223). With the way zoos are run now, it is not difficult to argue against the idea that breeding and keeping animals locked up for nothing but the zoo-goers pleasure is morally wrong. It would even be morally wrong if their welfare was not harmed. It would always be closer to prostitution or voyeurism than to stewardship. These are ethical harmful practices the future zoo needs to counter. But how can conservation be achieved without thwarting the rights and interests of the animals kept in captivity?

In addition to the tension coming from the clash between human interests and the interests of non-human animals, it is the dilemma of interests of entire species clashing with those of

individual animals that causes tension when it comes to wildlife conservation, especially given that our human irresponsibility might lead to some species forever carrying the label 'extinct' (Benz-Schwarzburg, 2015, p. 47-48). The interest of a species, in an evolutionary sense, appears to be survival just like the interest of any idle individual of a species appears to be survival too. And whilst both those interests can clash, they can also mean the same thing. With the human responsibility for the destruction of habitats in mind, could the zoo become a place where the species' interests and the individual animals' interests are both cared for?

2.5.3 Identification of Common Grounds: Bringing the Three Lines Back Together

When looking at this extended arm of nature, it is of use to understand what one really is looking at, meaning we need to take into consideration the ontological status of zoo animals. In a way, these animals, which by default are not *wild* animals given that they live their lives in man-made enclosures, are what is called *Nutztiere* in German. This word indicates that those animals referred to are more than mere livestock or production animals but serve another service too. This purpose, the *Nutzen* is easily defined for zoo animals, given that their alleged purpose is being kept in order to preserve their species' genes. And this purpose is one that is not necessarily the purpose of that individual used as a means to the end. In addition to that, zoo animals serve the purpose of being objects to look at for the zoo-going public.

One obvious problem of differentiating the zoo-going and the zoo-dwelling individuals from one another surely is the fact that those two groups are most likely "animated by different moral passions and visions" (Donnelley, 1995, p. 21). Decades ago already, Schweitzer pointed out that to be truly human one would have to see oneself as a brother to all other living creatures, not a master (Schweitzer, 2011, p. 114). Going one step further as the Spanish philosopher Jesús Mosterin does, one can argue that we as humans are not necessarily children of the gods, but first and foremost cousins of the chimpanzees (Katholische Nachrichten, 2006). Yet, understanding oneself as the first does not necessarily contradict understanding oneself as the latter.

This holds especially true if the only measure for an ethically sound behaviour is to focus on the best outcome of an idle action taking into account the interests of all players involved, "the greatest good for the greatest number" (Matheny, 2006, p. 15). When going through with this though it is of utmost importance to take the moral status of all these players into account. A moral status should be granted whenever there are interests at hand. And when taking animals into account, they should be granted a full moral status not because of indirect interests of humans in them, but for their own sake instead. The most fundamental interest of these animals appears to be the interest of living, of not dying for the sheer fact that there might still be moments of joy and happiness in store for them that they would be deprived of if stripped of their lives, an idea called the "holistic self-experience" by Bernd Ladwig (Ladwig, 2020).

The question of how to take the moral status into consideration pans out as soon as the two groups, in and out, and their interests are weighed up. There is no wrong in gauging different interests in a different fashion, but it is an undoubted degree of arbitrariness in gauging similar or identical interests in a different fashion. And this is where the keeping of a majority of animals in zoos comes into play again, given that they do have a moral status with undeniable intrinsic interests. Interests that might reach beyond those aspects covered in the welfare-oriented arguments. If these animals have an interest in their own lives and perhaps even understanding of themselves as a unity with an entire range of experiences throughout their life, then their death by for example culling does not just happen to them, so to speak, but is something they can experience and would most likely want to avoid or at least postpone as long as possible. Yet depriving these animals of their interest is a violation of their interests. The sheer process of overriding interests appears to be the morally substantial deed with ultimate consequences for those involved.

When discussing zoos, "an overwhelming majority of actual zoo exhibits involve deprivation that is experienced as such" (Zamir, 2007, p. 133). Even if "a significant portion of them induce deprivation without it being experienced as such, yet it is still morally wrong. Zoos are predicated on the wrong form of paternalism, one that unjustifiably intervenes in the lives of animals that can survive without human assistance" (Zamir, 2007, p. 133). With this in mind,

“conservationists and wildlife managers should recognize that individual sentient animals are morally considerable”, with all consequences this entails (Hutchins, 2007, p. 103).

One important moral question that needs addressing here is the one whether or not it is morally justifiable to keep animals in captivity in the first place. And if so, how this form of captivity should look like to be most welfare-oriented. If we then do decide to over-ride the animal’s interest by keeping it in captivity, we have to do so “by showing that we are providing what the animals need, and that our keeping them is in their interest” (Bostock, 1993, p. 46). In doing so, we should bare in mind that we as humans cannot go around collecting animals for our own sake only, but rather “as a working rule, we should assume an animal is well off in the wild, is best off there, and is likely to be much less well off in captivity” (Bostock, 1993, p. 75). This is much more difficult to address though with a party that cannot raise its voice in a way we can understand.

With most other human beings, we would argue that “give-and-take relations among humans are morally acceptable under various restrictions. This means that mutual use need not constitute exploitation” (Zamir, 2007, p. 126). The presumption here is that “given informed consent, given the existence of actual choice among genuine available alternatives, given that the transaction does not itself impose some morally distorted objective onto the life of one of the parties, there is nothing immoral in such exchanges” (Zamir, 2007, p. 126). With regards to keeping animals in captivity and depriving them from living their lives in freedom without any human interference, we are left with no clear informed consent to such treatment from the animals' side. In fact, we can safely assume with regard to their interest in good welfare and a possible interest in freedom that they would not consent. What we do is that we still elevate the interest of the species or conservation interests of humans, other species or the animals' own species above the individual's interests. This is how it is. And we better start spelling it out clearly because this overriding of the individual's interests is at the core of a pro argument for conservation done through zoos. The knowledge about the moral tension here needs to guide every step at the zoo.

Our best pro argument is that "zoos, alongside parks in cities and trees in city streets, and flowers and aquariums in homes, are ways in which man enriches his own environment" (Bostock, 1993, p. 177). But it is more than this; they can indeed "help to inculcate respect, even awe, for wildlife […]. Wonder at and respect for the natural world is what we need if we are going to have much chance of conserving other species in today's overcrowded world (overcrowded, that is, by humans)" (Bostock, 1993, p. 139). Similar to this, the idea of living and dying being part of the zoo has been mentioned before. This too can be seen as something, a learning experience if anything, the zoo and its education can offer, an "awareness of nature, especially the births and the deaths, something that those of us who live in towns are likely to be much less well aware of than those in the country, a dimension of experience" (Bostock, 1993, p. 181).

And whilst providing this dimension of experience, "zoos may already, and certainly could in the future, provide, as it were, living models to help to protect the 'real thing'. The better the zoo can provide seemingly real habitats, the better it can fulfil its role" (Bostock, 1993, p. 154). Of course, these habitats are staged in that their inhabitants "are living, as it were, by our favour and in the state we have arranged for them" (Bostock, 1993, p. 181). This becomes especially tricky then when the long-term goal of keeping these animals in the first place is to ensure their future reintroduction into their former habitat. In this case, as I will expand on later, the enclosures should be as realistic to the real deal as possible.

The funding and ubiquity of money is another tricky theme in zoos given that the living conditions of those animals within its boundaries are somewhat similar to those in other contemptuous enterprises. With a clear expectation of the zoo visitors to get something for their money, the animals at the zoo that people pay an entrance fee for to see fall victim of voyeurism. Of course, at present, "much of its [the zoo's] money comes from the gate, and, if the zoo did not exist, would in no way be available instead for conservations of wild habitats" (Bostock, 1993, p. 152). With a shifting interest towards conservation within the zoo world, "if zoos directly or indirectly raise money for conservation in the wild, that is as it were a bonus for the wild: money that would not otherwise have been available" (Bostock, 1993, p. 153). There is also the strong argument that the "raising of money for wild habitats is an

example of a supplementary conservational role. (Their scientific and educational roles are both in the end most obviously justified by the assistance they can give, and do give, to conservation)" (Bostock, 1993, p. 153). In this way, and this point cannot be overemphasised "zoos can act as a powerhouse of motivation for concern about conservation; namely, enlisting the interest and concern of the public as well as actually raising money for conservation in the field" (Bostock, 1993, p. 153). With our world being one in which even such delicate a topic as conservation is monetised, the money coming from the zoo can be a form of compensation towards wild spaces for taking into custody members of wild species.

2.5.4 Applying the Arguments to the Zoo of the Future

One of the greatest advantages of raising awareness in an oblivious society is by the means of education. Education regarding wildlife conservation can be done by showing ways in which even small changes like, for example, changes in consumer behaviour or the support and consideration of connecting fragmented habitats that have long-lasting ecological benefits, can assist ecological systems (Guarino, 2019). Whether or not living, sentient beings condemned to a life in captivity are needed to get educational points across remains to be debatable. I for one do not think they are. But in a way, these non-human animals allow us humans to encounter other living beings and develop empathy for those forms of life less closely related to our own species, that are not human.

In keeping animals in captivity, in depriving them from leading their lives in freedom, we as humans claim the right to take those animals into custody, but in doing so, we also have the duty to do what we believe to be the right thing for them (Pechlaner, 1993, p. 179). To legitimise this captivity from a utilitarian perspective, we have to do so for good reasons and for the greater good so to say. A zoo in this way has to be more than a recreational place for humans to leisurely spend a few enjoyable and light-hearted hours. It has to awaken the inherent appreciation and sympathy for the wonders of the natural world and by doing so awaken the urge to conserve and preserve it. At the same time, and this is going back a stretch towards the welfare oriented argumentation, we have to change our perspective towards those

animals kept at the zoo. We need to rectify our understanding and acceptance of seeing those animals in small, cramped, and unnatural enclosures.

The history of zoos has shown how the expectations and perceptions of the zoo-going public can be changed towards a more ethically legitimate zoo. In most Western zoos nowadays, bear pits with animals sitting in dug-out holes in the ground for the visitors to look at, as well as animal cubs taken from their mothers to be bottle fed and used for the visitors to take pictures from are a thing of yesteryear, or 2020's Netflix production Tiger King.

With going down this route though, the one of accepting animals to be in human custody from an utilitarian perspective, we have to acknowledge that the individual's right to freedom and her other basic interests are overtrumped by the greater good that is being defined as the survival of her species, the ideal of species conservation. Taking responsibility therefore also means ruling over an individual's destiny, even against her will. But always with greatest care.

Greatest care orientates on the state of the art in animal welfare science. Albeit having improved greatly in terms of medical care, nutritional changes, and breeding successes, allegedly animal-friendly and positive changes, undoubtedly increase overall animal welfare at the zoo. But they also reflect changes in human society or societal progress. These changes might drive us, ultimately, also to the abolishment of husbandry of species whose complex needs we cannot appropriately cater for in captivity.

One of the easiest ways to reduce individual suffering of animals at the zoo would of course be the abolishment of all living animals at the zoo. As Zamir points out "presenting dead rather than living animals surely makes for an entirely different institution and experience than the one offered by zoos. Yet natural history museums can meet the need to know or educate […] without the cruelty that zoos create" (Zamir, 2007, p. 133). Zoos will stress the idea of stewardship over their inhabitants: "if paternalism with regard to nonhuman animals is sometimes permissible, zoos appear to be worthy examples of such paternalism, since they often present themselves as a new kind of Ark, there to preserve and salvage endangered

animals" (Zamir, 2007, p. 133). The problematic paternalism inherent to the vision of such an ark is being overlaid by other, entirely positive narratives of care and stewardship.

The thought of widening the vision of the zoos as a Noah's Ark by substantially strengthening conservation as a task but also including new conservation strategies has been around for some years already. Bostock mentioned this when arguing that "other breeding technology, such as the development of sperm and egg storage, fertilisation in vitro, embryo transplantation and the like, can all be seen as part of a total armoury of weapons which it is good to have available if necessary" (Bostock, 1993, p. 145). And there are even a hand full of so called "frozen zoos" around already that have implemented the idea of cryopreservation into their total armoury of weapons to fight for species conservation.

A frozen zoo can be defined as "a collection of animal genes in the form of frozen semen and embryos. In practical terms this is a collection of sperm-holding straws stored in liquid nitrogen tanks" (Dorsser, 2010). The most prominent one is the frozen zoo at San Diego Zoo that has been around for almost half a century. It considers itself to be "the largest and most diverse collection of its kind in the world. It contains over 10,000 living cell cultures, oocytes, sperm, and embryos representing nearly 1,000 taxa, including one extinct species, the po'ouli", a species of passerine bird endemic to Hawaii (San Diego Zoo Institute for Conservation Research, 2020). Another animal on the frozen zoo's list is the northern white rhinoceros (*Ceratotherium simum cottoni*) that is functionally extinct, meaning that whilst there still are individuals, the species will die out with these last individuals. The idea behind the frozen zoo is that "germplasm stored in the Frozen Zoo has the potential to produce offspring when used for in vitro oocyte maturation and fertilization, artificial insemination, and embryo transfer" (San Diego Zoo Institute for Conservation Research, 2020).

Yet even if this would work on an animal like the northern white rhino, the would-be-born calf would not have any companions and conspecifics to grow up around and learn the natural behaviour from, given that the last two existing females, mother and daughter, with the daughter's father being her grandfather too, are quite old already as well. This would therefore be more a collection not unlike a museum with rare specimens being collected or a

Jurassic Park-like endeavour than real and sustainable species conservation. Especially when considering those animal species with complex behavioural patterns like hunting or migration strategies what will remain after resurrection is a mere phenotype of the animal species with many of the passed-on and learned behaviour traits missing, museum pieces ready for display in a way. A scenario that would be of more benefit to humans who come to see "the last of its kind" than to the animals involved. Eggs and sperm, the genes of the species would be saved though. In order to have in stock enough diverse gene pools to start an entire new population we needed many more samples of genes from a whole range of different mothers and fathers. Again, those need to be collected when the gene pool of a threatened species is still diverse enough. Only if substantially expanded the frozen zoo might be an interesting project to bring extinct species back to life should we succeed to preserve our planet and restore natural habitats.

The zoo of the future, in any case, should not and cannot be anthropocentric. It will have to be as holistic as possible, made for the animals' own sake that is the sake of conservation, conceptualised to be a last and powerful resort for natural diversity. This holistic zoo has to be ecocentric, focusing on every aspect of the natural world and its diversity, thereby allowing for a preservation of the natural diversity in its current state. With regards to humans, one could argue that such a zoo of the future could function as a warning sign telling us that the anthropocene is an era of loss and extinction, ultimately pointing to our own extinction.

For the time being, I would like to argue that the amount of species in zoos is too high, and it is too low as well. It is too high in a sense that the overwhelming majority of species kept in zoos are not part of conservation schemes, but only kept for egoistically human reasons. Those species should no longer be kept on a *carte blanche*. But the amount of species kept at the zoo is too low as well, given that so very many truly endangered species, especially those from the class of amphibians and reptiles are underrepresented whilst more and more of their kind face extinction each year.

In an ideal zoo, there should be only endangered species as these are the species the focus and effort of conservation should be on. But at the same time, it is hard to argue against the idea

of having less endangered species. Some not-yet endangered species we might want to safeguard should their population decrease, other animals we might need to gain more scientifically based knowledge on how to provide high welfare standards in captivity, something that is important with regard to other, endangered species as well. It is a fair point that zoos "cannot breed endangered species efficiently without the necessary experience, which means in practice that it cannot possibly keep only endangered animals", the reason being that "it would be highly irresponsible for a zoo to keep any endangered species – say, the Arabian oryx – if its staff had had no previous experience of keeping related, but less endangered species, of oryx or other antelope" (Bostock, 1993, p. 154). Still, the number of species kept could for sure be substantially reduced in light of what makes sense from a conservation perspective.

For the design of the zoo itself, it has to be made clear that "wilderness remains the 'ideal', the dream, the representation of the pristine world. Wilderness must be allowed to prevail wherever possible (albeit visited and studied by human beings)" (Tudge, 1991, p. 243). As a rule of thumb, "conservationists should endeavour to push as far as they can from the intensive end of the spectrum towards the wilderness. Zoos in general should grow into national parks, and some national parks at least might eventually become so large that they can (almost) be left alone" (Tudge, 1991, p. 243). The reproduction of entire ecosystems, starting with the soil and all the microbes within, continuing into the kingdom of *plantae* and *fungi* should be the ideal to aim for. Systems that would be kept running in huge nature reserves with functioning, complex, complete, and closed eco systems. With regards to the species at risk, it is more than the little brown jobs the zoo can and should save. The abolishment of the zoo would be short-sighted, also because for the time being, "they may have an enormously important role to play in safeguarding many large vertebrate species in a world overrun by one dominant primate species" (Bostock, 1993, p. 193).

The educational value of zoos can be substantially increased with a shift from gazing at singular exotic animals in cages to understanding entire ecosystems. This includes, for sure and pre-dominantly, educating about the complex and intertwined relationships of all players within the system, including the human role. Thereby, zoos should go beyond the claim to

foster an emotional bond between visitors and the animal kingdom by "encouraging empathy with and appreciation of other living beings" – empathy that turns into "a source of concern for the conservation of animals in their natural habitats" (Bostock, 1993, p. 193). The other side of the coin is a less emotional, but more rational achievement: people need to link the impact of their own behaviour as consumers who buy tropical timber and eat palm oil with the Red List Status of endangered species. Only if conservation combines both sides of the coin, the empathy felt for the destiny of other living beings and the rational understanding of their own impact we can put a halt to the destruction of habitats and the extinction of the species within. It is not enough for the zoo of the future to retreat to eliciting fascination for animals, a fascination that is easily gone when the visitor goes home to eat his next steak that stems from cattle fed by soy beans grown on land where before a pristine amazon rainforest stood.

I would continue to argue along Bostock's lines stating that "probably nothing a zoo can provide can rival seeing wildlife in the wild" (Bostock, 1993, p. 154). But this will only be possible to compare if there is still a wild left. And the role zoos can and need to play in the conservation of the wild *in-* as well as *ex-situ* cannot be overestimated.

2.6 Welcome to the "Zooture" – Mapping the Relevance of Future Zoos

Here, I will give a clear indication of what the zoo of the future will have to focus on to become a morally more defensible institution at last. Taking into consideration not merely the philosophical aspects, I will also look at scientific and technological aspects of this new development, bearing in mind all characteristics of this new, ideal zoo. The ideal of how the zoo ought to be.

In these prior chapters, I have shown that the present-day zoo falls short of living up to its own standards. In most instances, it is a travesty of the institution it could have already been decades ago. As a little recap of the first chapter, the zoo's state in the 21st century, I want to break down once again how flawed the self-image of the institution is by pulverising the four pillars the modern zoo justifies its existence with. In doing so, I will point out the weak spots in need of addressing. Let us start with the first pillar.

As we have seen, the first pillar, the education of the public, unfortunately falls short of its purpose, educating the public in a fruitful and lasting manner most of the time. What a zoo visitor sees in the vast majority of cases is an animal bored to idiocy, a reflection of a wild animal, in a man-made and often times barren and non-stimulating environment. What is learned, if anything at all, is something about those animals in captivity with a signage pointing out facts that can be looked up in any idle children's encyclopaedia on animals. If that sign says that chimpanzees live in large groups in the tropical rainforests of Africa, spending a lot of time in the high treetops where they also build nests to sleep in or on the soft rainforest floor, it says very little about those few motley individuals on the barren concrete floors apathetically vegetating their lives with joint pains because of the hard floor their limbs are not cut out for. They are poor teaching tools. What is transported is a distorted picture of the wild. More critical reflection by the visiting public would be needed for fruitful education. Part of this education will have to address the zoo's conservation efforts too, educating on threats faced by the animals displayed, and actions against these threats taken by the zoo.

The second pillar, the recreation for and entertainment of the public should not be up for discussion when this luxury problem is at stake for the zoo-goers whilst the most fundamental interests of the animals within the zoo enclosures are far from fulfilled. Just as animal fights, where in most cases animals go through severe suffering to entertain the human visitors, have been banned from most Western countries, the suffering from animals in zoos cannot be justified or accepted for the recreational benefit of the zoo-going public. Just how important the entertainment side of things is becomes apparent in that the quality of a zoo is usually referring to the quantity of its human visitors.

Now on to the third pillar, the scientific research conducted in zoos. The majority of scientific research conducted in zoos concerns either basic research that is easier conducted in zoos than it is in the animals' natural habitat, or science regarding internal management for the improvement of the zoo itself. There is little if any value added to the scientific community by this research because it concerns a field that would not exist if the institution would not exist and, in addition to this, is often conducted by external students that seek to finish their final thesis, and that might, like harsh critics of this work might argue, only be of debatable quality,

often times not peer-reviewed. The limited transgression of the scientific findings is important here as well given that the research conducted can only study idle animal *x* in an artificial setting *y* at the point in time *z*. It is also noteworthy here to see that under European law, a zoo has to conduct scientific research to gain its licence[32], a licence mandatory to participate in the trade of endangered wildlife. The research therefore, can be seen as a by-product of the zoo, not one of its core characters.

On to the last, and most promising of the four pillars, the one concerning the conservation of wildlife. When addressing wildlife conservation in zoos, one has to keep in mind that the wildlife conserved are individual, often times sentient beings posing as living displays. And if wildlife conservation is not done for its own sake, but for the animals' and with their reintroduction in mind, one has to acknowledge the fact that a reintroduction is neither planned, nor possible for most individuals within the zoo. Out of the tens of thousands of species known and scientifically described to this date and out of the thousands of species kept in European zoos only a fraction of less than 200 species are bred and preserved in a coordinated and organised manner. Yet, all zoo animals' captivity is justified by this pillar of wildlife conservation. In this context, the argument of wildlife conservation is ostensible within zoos as breeding needs to occur to maintain a population to display, it occurs out of self-interest. Wildlife conservation, however, can and should be precisely what conserves the zoo in the future.

Having looked at the state and pace of man-made habitat destruction, the main driver for loss in biodiversity, it is clear that the world will lose species by the minute. That is if nothing is done. And having mapped out what zoos, having claimed to be the best solution for wildlife conservation to this day, have done and are still doing, it is now time to cast a guess at the future of wildlife conservation. And to think about what the zoo could look like in order to rightfully claim to be in the interest of wildlife conservation – and wildlife conservation alone. All this is done whilst simultaneously considering the ethical implications discussed in the previous chapters. Those have clearly pointed at the necessity to not just adhere to animal

[32] See Verordnung der Bundesministerin für Gesundheit und Frauen über Mindestanforderungen an Zoos (Zoo-Verordnung) StF: BGBl. II Nr. 491/2004 [CELEX-Nr.: 31999L0022]

welfare standards but to improve those standards because unnecessary animal suffering is what we have to avoid even in the rather weak ethical account that builds on the principle of non-maleficence. In utilitarian weighing procedures welfare issues weigh heavily on the side of counter arguments. If we go beyond a pure welfare account we find other values to adhere to, like dignity and personal integrity. It seems that current zoos have major problems with regards to those values as well. Finally, conservation is a strong ethical argument in environmental ethics ultimately serving not just the survival of entire species but also biodiversity and planetary health. If zoos could indeed serve conservation purposes (or education in line with conservation), we have a stronger argument in favour of keeping them in existence. The question is how to do truly effective conservation without thwarting the individual animals' interests and welfare.

Following my argument that zoos can indeed be forceful custodians of endangered animal species and biodiversity in general, possible alternatives to what zoos look and work like are developed and discussed. This, as argued in the first parts, is of vital importance for the institutions' continued *raison d'être*.

In an ideal world, one would not even need an institution to save animal species originally from far away regions of the world. But with a majority of plant and animal species facing endangerment, even extinction, something has to be done. Of course, this is resulting from the line of argument taken in the previous parts. The number one priority is and should remain to be the conservation of wild habitats. Pristine or remaining strips of intact habitats would be the shortest answer to what wildlife conservation should be aiming at. But with habitats destroyed, the problem at hand and its solution is a more radical one. Taking animals from their original habitat, or keeping their descendants from living in their forebears' home turf, is an emergency measure done for the species greater good. And by no means a *carte blanche* for hoarding stacks of wild animals in antediluvian collections. As an emergency measure it is possible to admit that what zoos do is not perfect. It is a bad alternative we only continue because we have few others. Zoos should be self-critical in that way and use their self-criticism to move forward and improve in comparison with other alternatives.

There are several possibilities to react to criticism is a more self-critical manner. For example, it might be true that, until this day, zoos only ever raise interest in the most spectacular, sensational, and exotic forms of life for the zoos' own – often times financial – interest. This is the case even for the so-called modern zoo. Another possibility to accept criticism is with regard to seriously consider animal welfare. The individual animal's welfare has to be kept at the highest standard. That is not setting the bar at the highest standard of modern animal husbandry, but using the wild, natural habitat as reference. And then, the ultimate long-term focus should in fact be on conservation.

With more of a focus on conservation in the past years already, "the 21st century zoo can become a resource of hope and a call of action, a barrier to the threat of extinction and, more powerfully than ever, urban humanity's introduction to living wildlife" (Conway, 2007, p. 19). In becoming this, the zoo can become "a promoter of environmental literacy, and a recruiting center for conservationists – a catalyst for conservation" (Conway, 2007, p. 19). And it is exactly what the conservation-oriented argumentation in zoos is doing and ought to be doing, making the conservation of endangered species "the overriding mission of the modern zoo" (Dickie et al., 2007, p. 7).

Undoubtedly, some zoos already "are of a very high standard, in the way their animals' needs are catered for, and in their conservational aims and achievements", but at the same time, new ethological research is still showing us, "and is likely to do so more and more, how we can keep various relatively wild animals fully satisfactory" (Bostock, 1993, p. 193). One could even argue that "the coming years may reveal how short-sighted the zoos' abolition could be. They may have an enormously important role to play in safeguarding many large vertebrate species in a world overrun by one dominant primate species" and additionally another "conservational role arises from a very important educational role, that of encouraging empathy with and appreciation of other living beings in zoo visitors, adults and children" (Bostock, 1993, p. 193). This education in turn also is "a conservational role because such empathy and appreciation are a source of concern for the conservation of animals in their natural habitats" (Bostock, 1993, p. 193).

But for the time being, a major critic is and will remain to be that the zoos of today, with their *modus operandi* of yesteryear ultimately still fall short of living up to their own standards and expectations. At present, the so-called modern zoo is not the modern equivalent of Noah's Ark it claims to be. At best and in its present form, it is a meagre dinghy, half-inflated and hastily launched, ill-equipped for the task at hand.

It has to be absolutely clear that the future zoo has got to mark a drastic distinction from this dinghy. Let's see how it can become a leading institution of wildlife conservation, and an institution of holistic planetary conservation, too.

From my point of view, there are obvious ways out of the muck the zoo is in today. To start with, there is no reason not to also do in the zoo world what is being implemented in animal testing: The three Rs of reduction, replacement, and refinement, as recently suggested by Brando and Gjerris, would be a good standard to start on (Brando & Gjerris, 2022). If reduction, replacement, and refinement were to be applied in the zoo, a lot would change towards what I would consider a better zoo.

A reduction of those institutions calling themselves zoos would ultimately reduce the scale of the problem at hand. The most-renowned organisation representing those German-speaking zoos that consider themselves spear-heading the zoo world, is the aforementioned VdZ and has 56 members within Germany. There are however almost ten times as much zoos in Germany that do not tick the boxes of being modern under the VdZ's definition[33]. So given that the VdZ does try to implement its best practice wherever feasible, chances are that those institutions outside of this scope fall short of maintaining the debatable standards of high quality those 56 zoos try to uphold and lack any right to exist and continue their practice. Reducing the number of zoos therefore would already lighten the burden for the zoo world.

On to the replacement, that could see new ideas taking over the zoo's self-given role as an institution based on four pillars. The education of the public can be replaced in almost all cases by good natural history museums, pre-school and school education including

[33] See (VdZ, 2020).

conservation as a key theme to learn about, NGO's, documentary movies, or virtual reality experiences as discussed above. Furthermore, neither research nor recreation of the public depend on zoo animals being around to look at. The recreational quality does not have to be infringed by more zoological gardens turning into botanical gardens or adventure playgrounds for children and their parents to spend a jolly time. The scientific research could – granted with more effort – be conducted in the wild, giving more useful information on the animals and about their natural behaviour. And the conservation could easily be fulfilled in centres not dependent on the other three and arguably week pillars, carried out, again, by NGO's, ideally supported by increased public funding. So in short, zoos could be replaced. At least, however, we can surely live with less but better zoos.

Zoos, if they want to continue to play a role in the 21st century, will have to be refined in all of their many facets. This refers as much to their role as places for education, as it does to the one of being places for sound scientific research. The area where I see most potential for refining the aims and strategies of the zoo are the ones of their animal husbandry regimes and their conservation effort. The zoos' present-days overriding goal should be to reduce individual animal suffering for those souls housed within. Whilst this should be done with the individual's welfare in mind, with more enriched, more naturalistic, and larger, denser habitats, this should be done for the greater good. The good of allowing for conservation efforts to be fruitful at the lowest price an individual animal could possibly ante up for the survival of its species.

On the following pages, I will therefore expand on future and upcoming trends in 21st century zoos and outline ideas put into practice in some of these institutions already as well as draft potential ideas of how to face a more adequate design of the long-established idea of wildlife conservation. In doing this, I will bridge the gap between what zoos are doing at the moment, and ought to be doing to be morally legitimate in face of our understanding of the ever-changing relationship to other non-human animals. To show how zoos can achieve what they should strive for, I will introduce a few examples.

The introduction of virtual reality as an educational means and sperm banks for the preservation of genetic material are highlighted in that section. The aim is to follow up on some technological trends that could help us mould the zoo of the future into an institution that can deal better with animal welfare on the one hand and conservation on the other.

The aim of this part therefore is to take all points raised above, the light cast on the institutions many shortcomings, and propose the idea of a zoo, that surpasses all presently predominant organisations in the way they carry out their work of saving species as well as wild spaces from extinction. In doing so, a new kind of zoo, a new approach to wildlife conservation is lined out that escapes all perks of so called modern zoos found presently. In short, it is a redesign of the zoo, thus making it the zoo of the future.

2.6.1 When Disneyisation Meets Technology: What Current Trends Could Mean For the Future of Zoos

When looking at the modern zoo, there are two trends one can make out with regards to trying to heave the institution into the 21st century. The two trends go hand in hand and follow a certain underlying narrative that the zoo world has been introduced to decades ago already, namely the one of immersion (Coe, 2017; Coe & Lee, 1996). The first trend I will expand on is the one of Disneyisation, the second one that of a more future-oriented usage of technology, virtual reality in particular.

2.6.1.1 Disneyisation und Immersive Enclosure Design

Ever since Hagenbeck's revolution of animal enclosure design and animal presentation at the zoo, the design of enclosures has been aiming at immersing the public into a seemingly natural world, the one of the animals displayed within. Just as with the argument of education, the underlying idea is that visitors will only learn to appreciate, and hence cherish, and possibly think about protecting what they see and feel, or even more: what impresses them and sticks in their mind. Immersion in the zoo context has been defined as utilising seemingly living landscapes as "a tool for educating visitors" about the animals' natural habitat and "place in the ecology of [e.g.] the tropical forest", also by the use of "more realistic habitat

immersion and more frequent use of cultural features, such as simulated research camps", adding an emotional connection to what can be seen (Coe & Lee, 1996).

One of the latest zoos that was refurbished to fit Hagenbeck's design ideas and match an immersive strategy is the "Bioparc" in Valencia, Spain. This parc opened in 2008, replacing the old cages of the former "Zoo de Viveros de Valencia". In addition to focusing on a few African regions only, specialising in certain species, the Bioparc can be seen as a good example for putting effort into transporting emotions. It tries to sensitise the public for the complex links and interrelations within eco systems and hopes to thereby raise awareness for the conservation of these eco systems and all those animals within. The enclosures themselves however, look like they have been relocated from Northern Germany, revamped and set up again on the Iberian Peninsula.

Of course, this change in the Valencian zooscape reflects little more than a societal change with people feeling uncomfortable when gazing at so-called wild animals in outlandishly clean rooms through wire mesh or iron stanchions. For the zoo and the animals within it, "the twentieth century ended just about where Hagenbeck started it: the newest zoo designs for 'immersion exhibits' have returned to his ideas of re-creating natural environments for animals" (Rothfels, 2002, p. 200). One of the zoos that has almost perfected this sham is San Diego Zoo in California. Rothfels takes this into consideration when addressing the phenomenon of immersion in zoos too when saying that "the dream of these exhibits is captured well by Vicki Croke: 'At the San Diego Zoo, a visitor may find herself alone on the steep and shady path that leads down to the Tiger River exhibit. The vegetation on either side is dense and lush. The visitor is 'immersed' in the exhibit, transported into the jungle in Asia. But this jungle is inhabited by tigers, and when a low growl is heard just beyond the next bend, the temptation is to run.' This is precisely the sort of language, which people used to describe Hagenbeck's park when it opened in 1907" (Rothfels, 2002, p. 200).

The real break-through within these designs however is still to be anticipated. This is despite the fact that with "every advance in technology, immersion exhibits become more elaborate and more spectacular" (Rothfels, 2002, p. 201). An almost threatening idea is the fact that a

natural nature does not seem to suffice, instead, “a better ‘nature’ is created for animals: food is plentiful […] and a mental challenge to find; parasites are carefully managed; sicknesses are combated with the full range of modern medical technologies; climate is thoroughly regulated by advanced computer systems” (Rothfels, 2002, p. 201). But these more elaborate and more spectacular exhibits still ultimately disappoint given that despite all their window dressing they diffuse a wrong picture of the animals within, one of safety, content, and happiness, when one of desperation, fear, and extinction cannot be negated.

In short, those enclosures built in an immersive fashion try to replicate a primal, natural habitat resembling the one the animals within originally came from. The immersion exhibits goal is “to create a convincing verisimilitude” (Rothfels, 2002, p. 200). In being this, they provide the public with an almost perfect illusion (Siegmundt, 2015, p. 84). But it is and remains to be an illusion. An illusion that exists for one reason only, because the public, as a societal change, has “come to dislike looking at animals behind bars and in small glassed-in rooms and prefer exhibits in which animals appear to be living in nature”, or that, what the public conceives to be nature (Rothfels, 2002, p. 202).

They are not nature, not even replicas of it, but in fact, more than nature. With their seemingly ideal designs and paradisiacal living spaces, these immersive enclosures are an aggregated experience of nature. Their main shortcoming is that they are illusions with the human visitors’ interest in mind, not the non-human inhabitants’, proving the hypothesis that the zoo as an institution is an institution with the human interest at its core, not the animals. And this has always been the case. Right from the very start of Hagenbeck’s revolution, the result of which “we now call immersion exhibits, it has been clear that this type of exhibit was designed for the pleasure of the public, not the animals’” (Rothfels, 2002, p. 201). In short, “when people came to Hagenbeck’s park and saw the animals living in apparent freedom, they were ecstatic. But Hagenbeck’s park was not about restoring animals to their natural world. It was better than that” (Rothfels, 2002, p. 201) – for the vistitors who could cleanly and safely walk wild nature while offered all the comfort of a fun day out. This exclamation is yet another symptom for a zoo-phenomenon. In designing, rearranging, and mastering a picture-perfect nature, man transcends nature. At the same time, the human desire to control

and consume seems to be an indicator of the power issue within zoos. There are humans in power, who make other animals available to their gaze, thereby objectifying and visually consuming them in problematic ways (Beardsworth & Bryman 2001, Leitsberger & Benz-Schwarzburg 2015).

Another symptom of this control of creating artificial scenarios is theming that is heavily done throughout the zoo world. Zoo Leipzig for example built a massive tropical hall called "Gondwanaland" with a river, the "Gamanil" (a neologism stemming from Ganges, Amazon, and Nile) running through it (Zoo Leipzig, n.d.). And whilst all of these immersive trends and changes have done a great deal for the visitors, allowing them to be almost completely immersed into these naturalistic habitats, they have done very little for the animals inside that are still kept in restricting ways.

An easy thought experiment can be done here when looking at the animal enclosures. With all the artificial rocks, crags, and cliffs, all their trenches and armoured glass, the housing conditions of most animals appear to be in perfect order. If one were to enclose these habitats and their inhabitants with an additional layer of mesh or metal bars, the husbandry conditions that were considered favourable before would very likely look incongruous all of the sudden. Although very little would have changed for the captives, everything would have changed for the spectator.

Yet for the past few decades, halls like "Gondwanaland" have been a great trend in zoological gardens all over the world (Siegmundt, 2015, p. 85). These halls trying to mimic parts of eco systems are among the most advanced forms of immersive designs. But the way they are done, their orientation on providing a consumptive experience for the visitor, makes them part of the trend of disneyisation at the zoo.

In the process of disneyisation, the animal or whatever it represents and embodies as well as her artificially created zoo habitat (and thus the crafted idea of naturalness and wildness offered by the zoo) become promotional goods. The animal becomes a commodity, and if successful, even a top seller (Benz-Schwarzburg & Leitsberger, 2015, p. 25). It is neither the

animal's dignity nor respect that is at the centre of attention anymore, and not its conservation status either (Benz-Schwarzburg & Leitsberger, 2015, p. 25). As Benz-Schwarzburg and Leitsberger point out, the commodification of animals is twofold in this scenario. First of all does the animal directly become a product when used in a show, and second of all, does it become a product indirectly when any kind of merchandising refers to ideas we have about animals. In addition to this, they discuss how even in this indirect objectification the animal is means (advertising medium) to the purpose (increase in profits) and, as advertising message part of the product sold (Benz-Schwarzburg & Leitsberger, 2015, p. 26). With oftentimes anthropomorphic and sentimental expectations on animals being capitalised and marketed, the commodification has the potential of stripping the animal of the respect and reverence it deserves. Some objectified animals are also ridiculed (Benz-Schwarzburg & Leitsberger, 2015, p. 26-27).

As the two authors point out, it is more than debatable, whether the presentation of these animals as visually consumable objects emphasises their welfare, as demanded by the WAZA (Benz-Schwarzburg & Leitsberger, 2015, p. 22). If the animal herself with her welfare and needs and the conservation message are secondary here – or even absent at all – disneyisation within zoos should be frowned upon and abandoned. As with most things however, the lines are blurry and "on the one end of the spectrum, zoogeography and immersion design are used at the zoo exhibit to enable zoo-goers to see animals in their naturalistic settings. On the opposite end of the spectrum, animals are caged and cared for in the highly artificial settings" (Braverman, 2011, p. 809).

2.6.1.2 Virtual Reality

With all the problems of zoos in mind and a seemingly dominant trend of moving towards immersion and entertainment, the question is whether we can achieve the latter without running into ethical problems. Could we maybe including more technological innovations to create the zoo of the future?

There are of course zoo directors who believe that animal encounters at the zoo can and should not be replaced by technology or electronic engineering, not even with regards to the education of the public, at least not completely (Pechlaner, 1993, p. 177). Although Pechlaner concedes that a visit to the zoo could be more informative and eventful if additional information were to be offered electronically and in a captivating way. Still, the underlying idea of Pechlaner's opposition is that the additional information source is in reference to those animals displayed at the zoo. Imagine for example an interactive map showing the journey of a zoo animal to her destination zoo where the visitors can click on symbols opening up textboxes about the distinct stages of the animal's journey and her life. Additional experiences provided by technological means could, content-wise encompass, but should not be limited, to information on the animals' life history, symbiotic community at the zoo as well as in the wild, their natural habitat, or evolution (Pechlaner, 1993, p. 177). The interesting thing about this idea is that it could enhance the visitors impression of the life and actions of the animal displayed at this point in time in an interrelation with its eco system, thereby adding to the educational value of the mere animal display, also by highlighting things that would otherwise be invisible to the eye of the visitor by intelligent use of camera technology (Pechlaner, 1993, p. 178). The same would be the case for enhancing the experience with what Pechlaner dubs "sound corridors", guiding the visitors along an educational soundscape, thereby immersing them more than the mostly visual didactic of the zoo does today (Pechlaner, 1993, p. 178).
Despite being worthy some acknowledgement coming from such a hard-liner, the fundamental change needed remains unaltered in the above-mentioned scenarios. Animals are still kept and objectified for humans to look at; their welfare might still be compromised. The zoo, despite these changes, will remain an institution designed for mankind, not one for animals and the entire natural world. But technology has made magnificent developments over the past years and decades and we should consider more demanding employment of it. Can we provide an up close experience of animals by technological means that renders the real captive animal obsolete?

The options of experiencing animals from up close have changed and will change more. When considering the medium of virtual reality, it is important not to think about the recent developments over the past years, the small steps that have led to the state virtual reality is at

right now. What is important is to allow for the imagination to go beyond the present-day scenario and think about the indefinite possibilities that lie within virtual reality and technological progress. Virtual reality and its use as means of enhancing and revolutionising the zoo experience should not be thought of as plastic frames put over one's head to allow for a pixelated tiger to tumble through the field of vision. Virtual reality has the potential of changing more dramatically over the next few years. And if one is to imagine a virtual experience as more than dipping into a screen, but a virtual *reality* indeed, then the experience can be much more than any present-day zoo could ever wish to be able to offer. Imagine for example a tiger exhibit with a Safari Simulator aside, where visitors can experience a tiger encounter in India, 3D, 4D (adding movement to picture and audio) or even 5D (adding even more stimuli, like olfactory ones). They could actually feel what it is like to walk the tiger's natural habitat, smell what the tiger smells, feel the temperature and humidity, and observe the animal while hunting.

What visitors see at the zoo are mainly static animals. Animals that in many cases seem to be boring themselves to death: Primates resting or rocking in their jute potato bags trying to satisfy their need of building a nest. Predators languishing on heat rocks, or pacing the ever-same path through the enclosure allocated to them that is a mere fraction of what their natural habitat would be. Now imagine what the immersive effect, the experience would be if the reality one could see as a zoo-goer would not be that of despair and lethargy, the five-minute whiff of an otherwise life dribbling thither, but something that would leave the visitor with a feeling of wonder, admiration, awe, and understanding. Any BBC-documentary on animals, taking the time to go through an entire episode of an animal's life or life cycle, shows and teaches more than the brief encounter with any lackadaisical animal at the zoo. The movie industry is already proving that they can make alive even species who have roamed the earth millions of years ago: only recently, Apple Plus+ launched a wildly realistic Dinosaur docuseries narrated by David Attenborough, produced by Jon Favreau. Imagine that in 5D; imagine that for the story of orcas, polar bears or orang-utans, in the zoo; without a caged animal, but rather instead of it.

There is a recent example of a form of virtual reality that was discussed as an alternative to an aquarium at the Basel zoo. The idea was that "Vision Nemo", founded by a private foundation, was to be the first zoological data garden, a complete digitalisation of those marine animals that were to be housed in the inner-city ocean. The visitors were to experience an infinite array of marine creatures on high definition screens and experience real-time movement in a fashion and scale never seen before. The project however, was discontinued in 2018, and the city opted for the old-fashioned aquarium with all the shortcomings the inappropriate housing of marine animals comes with. The idea however, was a good one, an ethically more solid one.

The challenge with the implementation of virtual reality at the zoo would be to keep it as real as possible in terms of narrative. I would tend to agree with Bostock who argues that "probably nothing a zoo can provide can rival seeing wildlife in the wild" (Bostock, 1993, p. 154). A more modern, more sci-fi if you have it, approach to the implementation of virtual reality could see this changing. Let us just imagine more than a pair of glasses put on and a small screen to see something in, let us instead imagine a whole suit to put on to experience a *total* and *complete virtual reality*. If one were to imagine this virtual reality to be a reality allowing not only for visual stimulation, but auditory, tactile, thermal, olfactory, gustatory, kinaesthetic, and proprioceptic stimulation as well, it would be a whole different experience. A whole different experience not only for humans, but also for those animals that would no longer have to live in zoos so visitors can gaze at them.

There are two more noteworthy recent developments of animal experiences without animals at their very core. The first one being a German one. When the wind blowing in the face of circuses changed some years ago, Roncalli, a German circus that had already turned away almost completely from animal shows, took a leap of faith and surprised the public with a completely new show concept. The stars of this show were elephants and horses all right, but laser holograms beamed onto thin metal nets. And whilst these holograms still objectify elephants doing handstands and other tricks (Burns & Benz-Schwarzburg 2020, Burns & Benz-Schwarzburg, in press), they have clearly reduced animal suffering and proven to be able to draw in the crowds too.

The second example was the surprise launch of an animatronic dolphin by US-based tech company Edge Innovations in late 2020 (Cuthbertson, 2020). Edge Innovations introduced an artificial dolphin that offers hands-on experiences of swimming with a robot resembling a dolphin closely in any fresh water pool (Fennell, 2022). The company was even awarded a new Innovator Award for Animals by PETA (Perle, 2020). These two examples are certainly in line with a more animal-friendly immersion.

And whilst these trends circling around immersion certainly have already done something to heave the shop-worn institution into or at least towards the 21st century, there still remains a lot that has to be done. With conservation being and most likely remaining to be a topic that needs to be thought about and addressed for decades and centuries to come, the really interesting thought experiments are those aiming at hoisting the zoo beyond the 21st century, thereby defining what the future of wildlife conservation can and should look like and mapping the future role of zoos in this endeavour. This will be the main focus of my summary chapter, providing an outlook on future zoos as conservation parks.

3 Summary, Conclusions, and Outlook – Towards an Ethically Defensible Zoo of the Future

In this closing chapter, I will give a short summary of the arguments brought forward in this thesis. I will map out the imminent changes that need to take place to prepare the zoo's future, and I will point towards further intriguing fields of future research.

As I have shown in this thesis, the concept of the zoo in the state that it is in today is outlived. Too little has changed since the menageries of yesteryear have turned into the modern zoo more than a century ago. Tiles have been replaced with artificial rock; metal bars have been replaced with armoured glass. But the underlying character of the zoo, despite its superficial tapering and rejuvenation, has remained unaltered.

It still is an institution with the human visitor's interest at heart, not the interests of the non-human inhabitants. I have highlighted the many flaws and shortcomings of the modern zoo in the present and have given examples for each of these demerits. I have also cast a light towards what a re-thought, re-designed zoo could and should look like to be a morally permissible institution for individual animals to be kept in for at least the utilitarian perspective on zoos to be admissible.

The drastic change from an institution with the human visitors' interests at its centre towards an institution with the animals' interests at its centre is what is called for in the zoo of the future. The zoo of the future will have to focus on its inhabitants' well-being, interests, and survival. But it will have to ensure the survival of entire species. Ideally, these species should be conserved *in-situ* with *ex-situ* conservation efforts being a sometimes-necessary evil instead of the norm. The captivity of animals should be an emergency measure for their species' greater good, no excuse for an exploitation for human entertainment or profit. In this way, captivity would not be an ideal, but an accepted lesser evil in comparison to loosing species to man-made extinction.

At the core of any *ex-situ* effort should be the maxim of reducing individual animal suffering. This reduction of individual animal suffering, as I have pointed out, can come in many forms,

or better by a combination of those. It can be by an overall increase in general welfare by larger enclosures with more complex structuring. It can be in form of better nutritional care and more natural enrichment opportunities for the inhabitants like enclosure swaps or ideally the creation of entire eco systems and inter-species habitats. These try to mimic natural habitats also in terms of quantity of animal species rather than having one species only. Animals, as the example of contra-freeloading shows, want to work for food. And an increase in welfare can manifest itself by following the three Rs of reduction, replacement, and refinement of any zoos as entire institutions, but also within every single zoo.

This would also mean addressing the collection of animal species within each and every zoo and curating it more carefully. It means restraint wherever the most excellent care cannot be fulfilled. As discussed, among animal behaviourists, the rule of thumb is that the larger the territory of an animal is in its natural habitat, the higher the likelihood is for the development of "stereotypy and the extent of infant mortality in captivity" (Clubb & Mason, 2003, p. 473). With regards to certain animals scientific evidence suggests, "that the keeping of naturally wide-ranging carnivores should be either fundamentally improved or phased out" (Clubb & Mason, 2003, p. 473). The same holds for species whose complex socio-cognitive capacities make it hard for us to create an artificial environment that still meets their needs (Benz-Schwarzburg, 2020). As harsh as this might sound, some animal species might only be kept in a close to fully satisfactory way in their natural habitat or a husbandry system that might be fenced but comes very close to their habitat.

When it comes to animal husbandry within zoos, size matters. In small inner-city parks, there are by default space problems that limit the variety of animals that can be kept within the compounds. Addressing the composition strategy in zoos does not have to be the institution's *coup de grâce* as displaying "many small animals, may also be effective" in luring in the paying public (Mooney et al., 2020, p. 1). Attracting the masses thereby can still be a main goal. It is interesting to note that this 2020 study also shows that more visitors ultimately result in more money going towards conservation efforts. A lot will depend on the zoos creativity to attract visitors in high numbers by displaying truly endangered animals, perhaps mainly smaller species with manageable physical and psychological needs instead of

megafauna, blockbuster species or broad and “complete” collections of numerous different species. Quality in terms of animal welfare, education and conservation will be paramount.

In a holistic sense, it should also mean embracing as much of native flora and fauna as possible, given that these inner-city dwellings are rightfully referred to as green lungs of the cities. Conservation efforts should therefore also be put to practice with those species making their homes within the zoo independently of the exotic animals housed. Zoos should become places where visitors can learn about and encounter native endangered species. If the space of the zoo is considered one of conservation, it should conserve all forms of life it can within its means.

An interesting idea would be the one of the creation of new habitats. In the future artificial islands could be banked up for more than military activity as it is done in the South China Sea, or real estate development as in and around Dubai. Although, great care should be taken in order to not destroy flora and fauna, including marine habitat, whilst building such parks. Otherwise, the creation of terrestrial habitats would come with the forfeiture of a marine one and we have for too long ignored possible dramatic long-term consequences of human impact on marine life.

Increasing animal welfare and refining the husbandry regimes to keep individual suffering at bay means taking population management much more seriously. At present, breeding occurs ad hoc in many cases. And even if some sort of birth control is in place, many techniques are not refined enough to work and unwanted offspring is culled to keep group sizes manageable. Most studbooks like the EEPs only focus on present day genetics. What is needed though is the use of adequate software to map out a healthy gene pool not for the time being, but one with infinite generations in any future scenario.

Of course, the zoo has changed to a degree already, even drastically in some parts, morphing from an institution solely focused on the entertainment and education of the human public via spectacular and immersive animal exhibits, towards an institution devoted to conservation. This it at least the clearly detectable main narrative of zoos today. Still, a lot needs to be done

to actually contribute significantly to the conservation of wild species and also, most importantly, to the conservation of wild spaces.

Up to now, the conservation output of zoos, even of many big and scientifically managed ones being part of the umbrella organisations, seems unsatisfactory as the example of polar bear Knut in Zoo Berlin has shown. Knut's crowd-pulling popularity has by no means sensitised the public for the much-needed conservation of the Arctic and all its inhabitants. In order of fulfilling its self-acclaimed duty of a conservation hub, the zoo will have to up its stakes in real-life conservation also by (but not limited to) means of financial support *in-situ*. The zoo of the future should be one of the main vehicles to equip conservation in the field with much needed financial security.

If following the argument of animal ambassadors compellingly, there would have to be at least one conservation project in place for every idle species displayed at the zoo or at least for the ecosystem it belongs to. This seems necessary in order to justify the individual's captivity as much as the educational role of the zoo and its own justification. In light of the educational role with regards to the zoos work in conservation, a mandatory amount due for conservation would be very desirable for all zoos to raise. This fixed rate of funds would allow for a greater impact in conservation. It would be interesting to see if this fixed amount, say a 5% rate of all revenue in order to be accepted into the WAZA or EAZA, as umbrella organisations would be practicable. As there are mandatory fees for the participation in certain animal species like the Giant Panda (*Ailuropoda melanoleuca*) or Okapi (*Okapia johnstoni*), I cannot see why a fixed-rate going towards conservation should not be feasible with regards to all other species, too. In this way, in order to display certain animal species, zoos would have to participate in conservation efforts.

In the past chapters, I have shown that nature needs to be conserved, even if it means overtrumping an individual's interest with that of its species by spending its life in confinement for its species genes to survive. We must rewild the world to reduce our devastating track record in the anthropocene. We need to restore biodiversity wherever possible, too. And we must do it as much for the species lost or on their way out as much as

for our own sake, also as a demonstration of what can be saved if energy and thought are put towards a restoration. Anything short of that heroic goal would be immoral. Still, we need to do so without causing even more suffering and destruction.

What zoos need is a strategy that actually makes conservation and the education linked to it their main incentive. They will most likely need a common strategy, uniting and coordinating their efforts. We need to look at the possible synergetic effects of organisations like the WAZA or EAZA with regards to following one stringent conservation strategy. Rather than gadding about solitarily, the effect of a joint venture might prove to be ever so much more successful than the single actions seen today are. Again, this might mean to set the bar higher for those being allowed into the umbrella organisations.

The development of not just conservation strategies but also new conservation methodologies will be very important. The future of in-vitro fertilisation and the frozen zoos' work would be exciting to follow up on. For the time being, genetic material of many species has been saved. But to this date, only one Przewalski's horse (*Equus ferus przewalskii*) colt has been brought to life with this technique[34]. Naturally, or unnaturally as it may be, this is a great leap forward. One that might hopefully prove to be one of many. But the marathon run, the Sisyphean task of saving genetic material in deep frozen zoos as well is one of the most promising with regards to conserving today's status quo. Still, genes and their resulting offspring should not only be seen as intricate objects, but individuals too, meaning that such technologies always need to be discussed from a (bio)ethical perspective. And whilst this societal change has not reached every corner of the world yet, change appears to be inevitable when it comes to our human view on non-human animals.

I think that the changes described can alter the face of the zoo to a degree that it ultimately makes a difference with regards to zoo ethical criticism that aims beyond the usually applied utilitarian perspective of avoiding unnecessary suffering and fostering animal welfare. In a planetary connection, the objectification of animals at the zoo as well as outside of it should be frowned upon and overcome. The omnipresent disneyisation trend in the zoo world does

[34] See (Carlisle, 2020).

any notion of banning objectification a tremendous disservice in its caricaturist way of portraying the natural world.

Human society will need to adjust and change its mind-set when thinking about animals. Animals should be thought of not as the other, but one variety of the limitless variance in biodiversity *we too are a part of*. And whilst this might already be the case in some countries and animals are no longer completely outside of the moral sphere, by and large, they are still very close to the outer rim. One consequence of this, especially pertaining to conservation topics is that their interests are only even considered when not clashing with those of humans. We need to learn to consider them as subjects in their own right, not as objects we can use as we please, including for watching them because they are exotic or attractive to our eyes. As subjects taken seriously they can tell us something about animal behaviour, cognition, needs, welfare, about their habitats and how they have evolved in them, about what we lose when losing those rainforests, deserts or deep sees and, finally, they can teach us about our own impact on our surrounding and ultimately our own survival.

Rearranging the zoo along these lines could potentially have massive implications on the human-animal-relationship altogether. If the education of the zoo-going public were to encompass this thought and make sure to get the message across, the potential consequences would be unmatched by any previous zoo didactics. There will have to be a greater good at the zoo, our amusement, as I have made clear, is not good enough an excuse to justify or accept an individual's life-long suffering and frustration. Of course, this next step towards a (zoo-)animal liberation would encompass duties for humans too. Didactics, then, for sure, entails to propagate severe incision and restriction of so-called civilisation. Its main goal would have to be to focus on the real problem at hand, raising awareness for the way humans destroy the natural world and what each and every one of us can do to minimise and halt this destruction.

The prospect of difficulty, even resistance, either from the side of zoo directors who want to stick to what they are doing today or from the visitors who are coming to consume and not to learn, should not derail the idea's course. Albeit still lurking in the shadows of the future, a

change in the human-animal-relationship and understanding of us humans as being one with the complex natural world and the intertwined eco systems all other non-human animals are part of will be one of the great steps towards the zooture. For what I describe does not mean that the zoo should disappear or be abolished, but it should by all means change. I believe that the zoo can and should take measures to battle its uncanny and unappreciative past to surpass itself, rise above the entertainment goal and become what it should have been ever since we entered the anthropocene, a stronghold for species conservation.

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