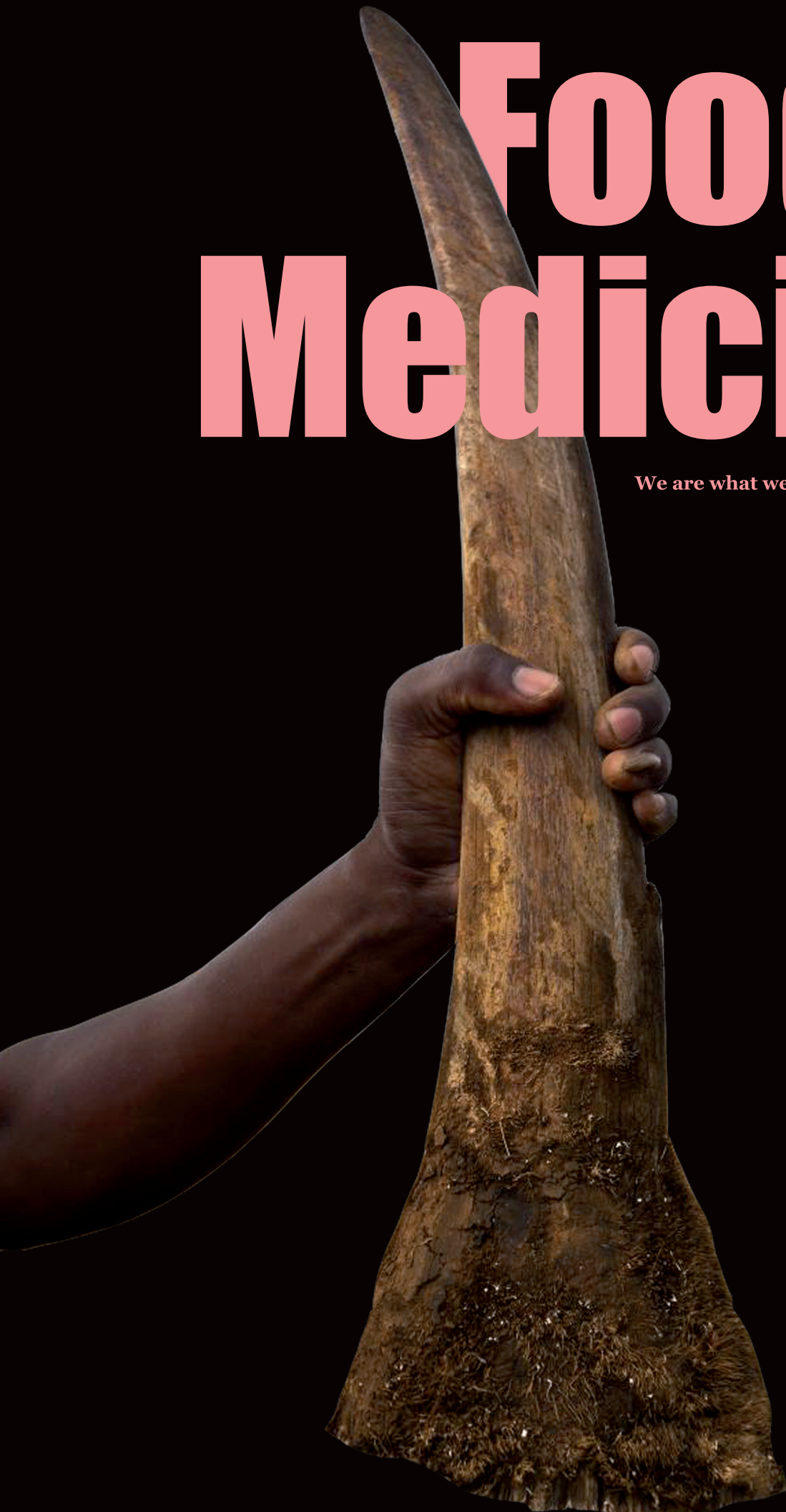


# Food & Medicine

We are what we eat • Janek Weidenbrücher



!elephants  
!snakes  
!bats  
!deer  
!mice  
!bears  
!cattle  
!turtles  
!frogs  
!seahorses  
!tigers  
!lizards  
!donkeys  
!gazelles  
!sharks  
!horses  
!pangolins  
!monkeys  
!porcupines  
!antelopes  
!beavers  
!sea lions

Questioning

Is there a way to resolve the conflict between health, culture and environmental conservation through a new interpretation of producing alternatives?

Many cultures have their own systems of alternative medicine. Most of the time the effectiveness cannot be proven according to contemporary scientific analysis. They are usually regarded as mere cultural myths. The animals are commercially exploited for those perceived health benefits derived from consuming their parts. Sadly driven to the brink of extinction, bones, dried organs, and other parts are believed to impart strength, virility and other curative powers.

Subsistence use of wild animals for food has been practiced for millennia, most often (though not always) without upsetting the balance of nature. When animals are traded commercially for food and medicine however, overexploitation can quickly plunge ecosystems into disarray. In today's global society, the line between subsistence and commercial hunting is becoming increasingly blurred – all the more so due to rising human population and consumer demand, political instability, economic collapse, and a lack of proper law enforcement.

The huge demand for wild animals in traditional Chinese medicine for example poses a threat to endangered species. Nevertheless, TCM may offer other benefits beyond mainstream western medicine.

The demand for animal parts seems as high as it has never been before. Unfortunately this leads to an steadily growing black market and the associated, indispensable extinction of the animals. On the following pages you'll find just a few of the sad facts around this – abuse of cultural habits?

In TCM, almost every part of the tiger is considered sacred and capable of healing. Tiger bone, one of the most prized parts of the animal, is ground up and used to treat arthritis and other joint ailments as well as impotence. Many have compared the effects of tiger bone to simply taking an aspirin. Although the use of tiger bone in traditional medicine has decreased in recent years, the demand for tiger bone itself has never been higher. Tiger bones or entire skeletons are soaked in wine and considered as status symbol. An estimated 1,000 tigers have been killed for their parts in the past 10 years to meet demands in Asia. Considering the fact that there are only around 3,200 tigers left in the wild, this is no small loss.

More than 10,000 bears are kept on bile farms in China, an additional 2,000 in Vietnam. Bears used in this industry are bred and confined to life in small "crush cages", forced to suffer through painful and invasive procedures to have bile extracted from their gall bladders. Bear bile is believed to help reduce inflammation, expel toxins, improve symptoms of conjunctivitis and hepatitis, and cure headaches. Although bear bile has been known to alleviate the symptoms of some conditions, there are many other inexpensive synthetic and herbal alternatives that don't require the abuse of an animal. Some even believe that bear bile can prevent type 1 diabetes, however, this has been proven to be completely false. The demand for bile and gallbladders exists in asian communities throughout the world, including the EU and the US. This demand has led to bears being hunted in the US specifically for this purpose.

The pangolin is the most illegally trafficked animal in the world. Although the pangolin is eaten as a delicacy, it's also believed to have medicinal value. It's thought that the pangolin can enhance kidney function, cure asthma and improve signs of psoriasis. Its blood is said to have healing powers. Dried pangolin scales are also thought to produce lactation and improve blood flow. Nearly one million pangolins have been poached in the past 10 years. At this rate, this little scaly creature may be poached into oblivion before most of the world is even aware that they exist.

Rhinoceros horn is thought to treat fever, convulsions and hallucinations. The horn is composed of keratin, one of the main components of our fingernails. With seemingly no evidence to show rhino horn will benefit health or cure any ailments. The illegal wildlife trade is one of the leading causes behind the decimation of all rhino populations as these animals are exclusively poached only for their horns. In 2014, 1,215 rhinos were poached in South Africa alone. One killed rhino every 8 hours. The Western Black Rhino has already been declared extinct from the wild and many other species are set to follow if we don't put an end to the illegal trade.

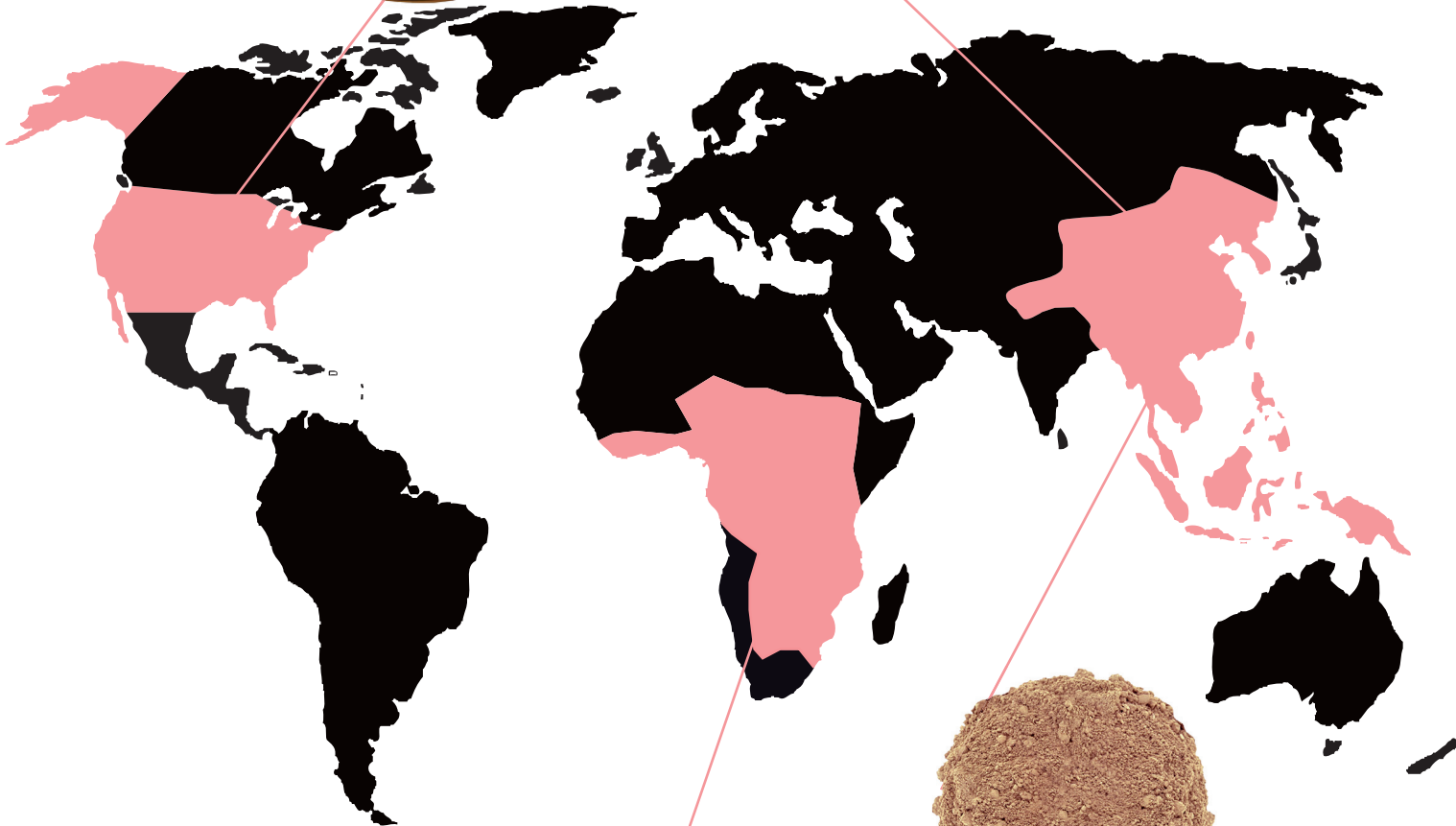
While the best-known species such as tiger, rhino and bear are neither legally available in Europe nor used by local TCM doctors, turtles, seahorses or snakes are even in Europe used as ingredients that may be included in TCM recipes. Although many of these species have been protected in recent years, their trade is permitted to a certain extent, so that the stocks in nature are still looted.



Animals facing extinction is a global issue. Eventhough the biggest demand exists in the asian area, the animals are getting benefits hunted for their health all over the world.



In 2011 more than 12,000 bears are currently estimated to be housed in both illegal and legal bear farms across Asia. In 2008 solely in North America, 40,000 american black bears are illegally poached for their gallbladders and paws. Bear paw soup is an Asian culinary delicacy.



The pangolin population decline 90% since 1960s. Used as food, the best known way to cook it is as bushmeat (BBQ) or in pangolin fetus soup. It is said that Pangolin meat, inter alia, will cure lactation issues, blood circulation problems, cancer, enhance kidney function, cure asthma and improve signs of psoriasis.



There are five species of rhinoceros, three in Asia and two in Africa, and all have been hunted to near extinction so their horns can be ground into powder, for aphrodisiacs, arthritis to depression. In 1930, there were 80,000 black rhinos in Africa. Now there are fewer than 2,500.

# Interview with Lixing

MA Student Kisd  
From China  
Focus Integrated Design  
Lately several food projects

Lixing was an ideal interviewee to give me a view on the situation in his homeland, why people behave like they do and how the thought on this controversial topic is in China. He lately dealt with food projects around his culture, maybe he can give me some enlightenment.

**Do you have experiences with TCM or even medicine based on animal parts or do you know people in your circle who did it?** I do have some personal experiences with the TCM. But more with the herbs. When I was 6 I had really bad skin problems, so my parents took me to a traditional Chinese doctor, it was kind of strange because I can't remember that the doctor did any tests on me. He just looked at my skin and prepared a recipe containing many different herbs and told my parents that I had to eat this 'strange Chinese medicine soup' twice a day for 3 months. It was so disgusting. **Did it work?** Actually it did work somehow! But I'm not sure if it was because of the herb effects or because I had to eat this disgusting soup twice a day and had no appetite for anything else which maybe caused the skin problems. **So the generation of your parents are used to TCM as their way to cure sickness or diseases, eventhough they are enlightened about western, scientifically confirmed medicine?** Absolutely! My parents are well educated, went to college, stick to the wealthy middle class, they are enlightened. But eventhough they could get access to western medicine methods, meaning to be able to pay high costst, they rather believe in TCM as a cultural habit.

I remember that my mother once used the skin of a special frog living in the mountains of China, as a ingredient in her medicine, to cool down her body temperature. -Laughs- **Alright, so now it's on you and your generation. How does the younger generation stand to TCM and the causing extinction and abuse of animals? Is there maybe a shift going on in the 'global minds' or do you even know**

**people in your country who stick to western medicine to stop this violence?** Yes I think in my generation is a shift going on. Especially for the animal based medicine the awareness is growing and many people want to get rid of it and stop the extinction. They would

illegal parts or medicine to make money. They are holding lectures where they sell their 'medicine' and promote wrong concepts to older generations to gain more profit. **But, of course, they are never ever been medically confirmed?** -Laughs- Of course not. The

older generations don't question these methods, they want to believe that they get cured. While the younger generations do question this wheeling and dealing. That is what causing the shift. **Yeah I see. Alright, so as a last question, I like to ask you what your predictions for the future are, as we now facing synthetic production even of animal parts and their ingredients. Do you think methods like this will be supported in China? Or is it about being one with the spirit of the animal when having parts of them in yourself? So like the people say, event-**

## There is a shift going on in the minds of the younger generations

never take medicine based on animal parts. They rather spread the word that they are against it! **Ok that's cool! I asked myself what role media plays in this topic? Is there a promotion for sticking to old cultural habits for example?** Yes, the role media plays in China is very upset. They're always on the peoples mind, promoting them with what is right and what is wrong, what to do and what not. Even my grandparents have smartphones and they are reading articles which lead them in a wrong way of thinking. That's where the younger generation tries to intervene. It goes that far, many chinese doctors aren't even real doctors, they just sell the

**hough the synthetic version contains the same curing ingredients as the real parts from nature, it's not the same.** I think in future it will change. The next generation will have to deal with all the onus, eventually taking over mainstream media and use it as an enlightenment. We will get rid of all the wrong concepts and tell people to overthink their feelings towards some of the practices of the TCM. Eventhough Most of the TCM is good and makes sense. So it's not about getting rid of traditional cultural habits which are good and helpful, but maybe catalyze them and take global benefit from the herb based part or accupuncture for example. So i'm really looking forward and have a positive prediction for the future.





# Design

## a way out?

In both design practice and theory formation, environmental sustainability, social justice, and political expression are regarded as a measure of social responsibility. Designers working in these emerging design fields are responsible for projects that have significant and fundamental impact on the quality of people's lives with clear ethical implications. The following two projects are both seen as critical design due to their inventors. They are giving us an idea on how medicine and food production is gonna evolve and what benefits it might bring with. With an exciting, sustainable outcome concerning environment and lifes in future on this planet.

Fig. 1



Fig. 3

**Kuang-Yi Ku** born and raised in Taipei, Taiwan, recently based in the Netherlands. He has graduated with triple master degrees with social design from Design Academy Eindhoven, dentistry from National Yang-Ming University and communication design from Shih Chien University. He is a practicing dentist, a bio-artist and a social designer. His work often deals with human body, sexuality, interspecies interaction and medical technology, aiming to investigate the relationships among technology, individual and environment.

Ku's latest project, the **Tiger Penis Project**, deals with the topic of animals facing extinction due to TCM. He describes his project as follows: "Bringing non-western perspectives to speculative design scenarios, this project proposes the use of emerging biotechnologies to create artificial animal parts for Chinese medicine. Combining western and Chinese medicine and technologies, this new hybrid medicine prevents the further destruction of both animals and traditional cultures, and provides more possibilities for the coexistence of human society and the natural environment."



Fig. 2

Ku collaborated with Baltan Laboratories in Eindhoven. There he experimented with emerging biotechnologies to create hybridized animal parts for medicinal usage. In detail he combines DNA of the tiger penis, an octopus and an oyster – all animals, or parts of them, symbolizing sexuality or are said to be an aphrodisiac. After that he grows tissue cultures of the new, synthesized DNA. On the left (Fig. 1) is the 3D bioprinted structure of the body parts of these species. As last step Ku puts the cells on the 3D structure and let them grow further (Fig.2).

In this project, due to legal restrictions, some of the technologies still cannot be implemented in the design practice at this stage, including genetic modification of animals. Thereby, at this stage, the approaches of speculative design and critical design are utilized to create a fictional scenario. For the scenario, a series of objects, images, and performances or activities are offered to allow the viewers to experience the ethical, economic and political debates that might appear in the future society where the pills have been invented.

**Chloé Rutzerveld** is a critical food designer who explores and challenges food production and consumption. She is fascinated by nature, the human body and the strange relationship people have with food. After she graduated Cum Laude from the Eindhoven University of Technology in 2014, she started her own studio as Food and Concept Designer. Her work is interdisciplinary and a direct response to the things she questions or is fascinated about. By combining aspects of design, science and technology she thinks up new ways to make our food more efficient, healthy and sustainable. She encourages people to critically engage with food production and consumption. In her project **Edible Growth** she

connects nature growth, technology, science and design in a new way. **Edible Growth** is a critical design project about the potential use of additive manufacturing in food production. It's an example of high-tech but fully natural, healthy, and sustainable food made possible. Multiple layers of support structure and an edible breeding ground that includes seeds, spores and yeast, are printed according to a personalized 3D file. Within five days the plants and fungi mature while the yeast ferments the solid inside into a liquid. The products intensifying structure, scent and taste are reflected in its changing appearance (Fig.3). Depending on the preferred intensity, the consumer decides when to harvest and enjoy the fresh and nutrient-rich edible. Modern urban farming & consumer involvement in food production. The consumer becomes the farmer and will be more involved in the production of their food, without spending a lot of time gardening. The farmer will become the supplier of the raw materials. This project comes up with several environmental benefits. Printing growth-enabling structures for home growth reduces the amount of agricultural land drastically. At the same time post harvest activities and harvest labour become unnecessary. Farmers will become the providers of raw materials. This will have a huge impact on reducing the agricultural footprint. The reduction of food miles is another benefit. Because only the raw materials have to be delivered, the food production chain is very short. Produce does not need to be transported from the field to distribution centre – to an auction – wholesale – packaging – supermarkets and eventually to the consumer. It's printed directly and on demand in a recyclable greenhouse in a grocery store or shop-in-shop after which the basic structure with the edible breeding-ground, precisely located seeds, spores and yeast will develop at the consumers house. As a following the produce doesn't need to be stored and therefore can not turn bad, which also makes conservatives in our food unnecessary. In the end the consumer becomes the farmer and harvests the product before consumption. Absolute freshness without additives. The consumer will be more involved in the growth process of the food and becomes more aware of food production and consumption – the benefit of increasing the awareness for our whole food-policy, which in the end is the most fundamental point to understand why it is so important to set a switch on how to deal with food, its background, its production, its processing and its health benefits.



# Conclusion

There has been several researches on this topic. For example 3D printing rhino horn and flood the market with the hope that cheaper purchases of the synthetic one (same look, feel, smell, ingredients) will help to save the animal. But unfortunately it seems unlikely that this synthetic rhino horn will have an impact on the demand for the real deal. However, the circulation of a synthetic product that so closely resembles the real product could easily become the worst nightmare of enforcement agencies worldwide, as authorities will have a hard time distinguishing between synthetic and illegally obtained rhino horn. Another related issue is that by making synthetic rhino horn widely available, the producer faces some perverse incentives to perpetuate the idea that it has indeed some medical properties. In a 2016 study, “Perception, Price, and Preference: Consumption and Protection of Wild Animals Used in Traditional Medicine”, researchers wanted to assess consumer ideologies surrounding the consumption of these products. By having participants fill out questionnaires and respond to in-depth interviews, the experimenters found that Beijing consumers “demonstrated little knowledge about TCMs, particularly their composition.” There was also a pronounced preference for those products including animal parts to be wild-sourced rather than substituted with a synthetic material or from a farm-raised animal. “This preference was most commonly attributed to a belief that TAMs derived from wild animals are more effective than materials from other sources. In contrast, only a few respondents appeared to be motivated by conservation consciousness to choose substitutes or synthetic materials.” So what should one do? Sensitize TCM practicing physicians to biodiversity issues and show ecologically compatible alternatives like resort to slaughterhouse waste or crops? Seems like that won't work. Instead of turning to the consumer, maybe the ones practicing TCM should be addressed. Get into talk with them. Or like Lixing said, set hope in upcoming generations and a good enlightenment. Concerning the fact that in the next 50 years, up to one third of the world's plant and animal species could be lost forever,

I think it's about time to do something! People just don't or maybe won't understand that this planet cannot exist without its nature and that we are abusing this natural environment, the fundamentals of our lives, everyday more and more. There are several reasons for this. Climate change, poaching, overpopulation and the very questionable topic of this issue. When I started my researches on this, I wasn't even rudimentary realizing how big the impact of these “traditions” affect animals lives. I was shocked about most of the methods – and started questioning humans thinking once again. It is important to note that the effectiveness of these animal parts is far from being verified, which makes death and the extinction of these animals due to superstition and a whim rather than a real benefit to health. But I think one main aspect of this animal extinction is the dirty business behind it, the abuse or the commercialization of what should be seen as cultural habits. During my research it was so confusing because everyone was talking about different health benefits on the same animal. This shows how much storytelling and unproven nonsense comes in with all this. Through my interview with Lixing I got a good overview on how this business is running in China. That there are plenty of “fake-doctors” selling their own “varified” medicine, even holding public talks about it. I assume the ingredients are trash. But it is the possibility to make big money, no matter on whose or what's life. The price for rhino horn moves in ranges of gold, GOLD. YES GOLD. I searched for answers, for the why. Why do people practice or try to benefit from traditions involving animal cruelty? But this is just too big for me, it's how the world runs and it just don't make any explainable sense to me. All I know is that the counter-movement is growing with the possibilities of communicating and enlightenment. That we as designers can have big impact on that. The two presented projects are wonderful examples of how critical views and critical design are utilized. Combined with interdisciplinary work and the belief on succeeding can bring unknown possibilities. Through great connection and an united belief it is possible to solve main problems like this!



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