



Neotenous Dark Dwellers - Lygophilia

| **Robertina Šebjanič**



Neotenous Dark Dwellers - Lygophilia a multilayered intertwined artwork



Neotenous Dark Dwellers - Lygophilia a multilayered intertwined artwork

On 31 August 2018, Robertina Šebjanič premiered her installation, *Neotenous Dark Dwellers - Lygophilia* at the gallery OSMO/ZA in Ljubljana, Slovenia.

The installation is composed of two cabinets on wheels. Each cabinet, made out of Plexiglas and stainless steel, is an open box with shelves and vertical panels. The panels can be pulled out to make their content visible and some of the shelves are articulated. Three shelves are Plexiglas cylinders.

Each cabinet contains heterogeneous objects and documents such as books, old scientific drawings, blown glass sculptures and other oddities.

One is dedicated to the *Ambystoma mexicanum*, better known under its common name of axolotl, and the other one to the *Proteus anguinus*.

The name axolotl is said to have two origins: one is related to the Aztec god Xolotl who has backward feet and the head of

a dog and who, in one story, transforms himself into the amphibian to escape a threat; the second comes from “atl” and “xolotl”, the words for “water” and “dog” in Nahuatl, the language of the Aztecs. The Spanish name is ajolote. The animal has sometimes been nicknamed “walking fish”.

Proteus anguinus is also called olm and, locally, “močeril” or baby dragon, but more commonly it is called “human fish” due to its white-pink skin colour.

Although the two cabinets are very similar, they show some differences such as a Plexiglas ‘roof’ and an underneath shelf on the axolotl one.

Axolotl and proteus are amphibians (salamanders) that have found habitats in very specific and located places, the swamps of the lakes around the City of Mexico in the case of the former and the Dinaric karst caves (mostly in Slovenia) in the case of the latter, showing an example of parallel evolution, endemism and adaptation to narrow and extreme niches. They are



aquatic animals, favouring darkness (the proteus is severely hurt by daylight).

The two animals share other singular characteristics such as neoteny and regenerative abilities. Neoteny is the capacity to reproduce as a juvenile. They do not achieve metamorphosis and they retain larva traits, such as external gills, as adults. Both lay eggs. They show the capacity to regrow their body parts when cut off or damaged.

Under certain conditions the axolotl, which is a member of the tiger salamander species, can achieve metamorphosis while the proteus cannot. The axolotl reproduces well in captivity, whether in laboratories or private home aquariums.

The totally blind proteus is the only European cave vertebrate and a relic species of a rich Tertiary fauna. It has no living close relatives among recent European amphibians and shows an extraordinary lifespan, reaching up to a 100 years of age and maybe more.

These animals that originally had no predators and were at the top of their food chain are now endangered species in their natural environment.

Neotenous Dark Dwellers - Lygophilia is a multilayered intertwined artwork at many levels.

Through the diversity of the nature of the elements composing the work and the connections made between the two animals, it folds and unfolds their stories and ours, weaving together mythologies and sciences, history and future, fears and desires, continents and cultures, humans and other than humans.

Under the umbrella of "Lygophilia", Robertina Šebjanič has created a series of artworks, the video essay *Piscis ludicrous / Transfixed Gaze (Lygophilia)*, the audio composition *Dark Drops (Lygophilia)*, the installations *Neotenous Dark Dwellers - Lygophilia* and *Odorantur_Lygophilia*, which she not only exhibits together sometimes but also combines and reshuffles. This is how *Dark Drops* has now become part of *Neotenous Dark Dwellers*, the artwork that is documented here.

A. Bureaud

English editing by Ana Čavić





Robertina Šebjanič



image © Miha Godec



Aquatic animals

Dark Drops (Lygophilia) by **Robertina Šebjanič**, 2017 - 2018

Audio composition, vinyl record (20 min)

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Field recording of drops of water by Robertina Šebjanič at the Planinska jama cave and Zelniške jame cave in Rakov Škocjan, Slovenia, processed into an audio composition. In the exhibition room, the sound is played both on a vinyl record and a sound loop on a Raspberry Pi.

image: Miha Godec



Aquatic animals

Humans are visual animals and the *Lygophilia* installation is quite attractive to our eyes, with its many intriguing objects and documents — whether shiny or delicate, ordinary or unusual — on display. It takes a few moments for us to become aware of the sound that is bathing the room and coming from two sources: a vinyl record playing in the Proteus Cabinet and, interweaved with it, a sound loop of the same recordings playing from a hidden electronic device. It is the sound of drops of water, bringing the acoustics of the natural cave habitat of the proteus into the human gallery space.

Robertina Šebjanič writes:

"Drops that resonate in the darkness of the caves are condensed representation of a complex and extreme environment that is still full of mystery, darkness and a special beauty, where geological and biological times seem to happen in a different time span.

In the caves the sound of the water dropping has a strong presence as is the sound that is breaking the silence to the proteus. These little drops are the 'information transfer' getting the information about the living conditions from above that are coming deep into the cave. They are the source of food for biological life as well as the building material for the geological structures."

Both proteus and axolotl are aquatic creatures and, as such, both bear witness to the pollution and deterioration of their respective waters, which happen to be also *our* waters.

Proteus water issues

All the travellers, explorers, scientists and curious minded people who travelled to the Slovenian caves in the 19th century reported that it was quite easy to keep proteus alive outside of their habitat so long as you provided them with clear river



water changed regularly and, of course, kept them in the dark.

The proteus lives in subterranean rivers and caves of the Dinaric Karst regions stretching from Italy, Slovenia, Croatia, Bosnia and Herzegovina to Montenegro. Karst is a geomorphological landscape named after the region of Kras, a limestone plateau above the Gulf of Trieste (Italy). It is formed from the dissolution of soluble rocks such as limestone, dolomite or gypsum that creates an underground network of caves, grottos and sinkholes. The Dinaric Karst aquifer system is the main source of drinking water in most of the countries of the area and a major contributor of freshwater for the Adriatic Sea.

"With Proteus we share dependence on groundwater. The habitat of proteus is the ultimate source of drinking water."

— Brochure from the Tular Cave Laboratory

Alterations to the hydraulic karstic system, such as increase in temperature, reduction of dissolved oxygen, modification of the regime of flooding of the caves, pollution of the underground waters coming from intensive agriculture and from non-regulated urbanisation and industry as well as reduction or in-

crease in the quantity of organic matter, are major threats to the survival of the proteus. Having an extraordinary longevity (up to 100 years), even low concentration of pollutants may accumulate to lethal values in its body and habitat. Moreover, it has chemical receptors to perceive its environment. Therefore, if the water is polluted, it alters its ability to locate food and other useful information essential to its survival.

"By polluting the waters where the proteus are living, we are chemically blinding them"

— Robertina Šebjanič, during an online conversation with Annick Bureau, 21 September 2019

Axolotl water issues

Axolotls were endemic to Mexico City's interconnected lakes. The City, having been built precisely upon them, has been slowly drying them out by proliferating and expanding, covering the rivers and canals to build roads. It has, in the first place, seriously shrunk the amphibians' habitat to a reduced maze of canals: the remnants of lake Xochimilco.



"[...] During pre-Columbian times, aquatic habitats within the Central Valley were ideal for axolotls. The Aztecs engineered these habitats into a system of canals and wetlands that greatly increased the amount of shoreline. Axolotls thrived within these habitats and provided an abundant and readily available food source. [...]"

— 'A Tale of Two Axolotls', S. Randal Voss, M. Ryan Woodcock, and Luis Zambrano, *BioScience*, December 2015 / Vol.65 n°12, pp. 1134-1140

<https://academic.oup.com/bioscience/article/65/12/1134/223981>

<https://doi.org/10.1093/biosci/biv153>

In its natural habitat, axolotl inhabits deep, permanent, clear water. Xochimilco is now a muddy wetland supporting a traditional agriculture system, however artificial, based on water — the so called *chinampas*.

"These canals of Xochimilco, along with artificial islands called chinampas, now serve as an attraction for numerous tourists and other city residents who enjoy riding on colourful Trajineras, gondola-like boats that travel on the waters. The canal and chinampa system, as a vestige of the area's pre-Hispanic past, has made Xochimilco a World Heritage Site, but the threat of

losing a major part of its natural environment due to an ecological catastrophe is a serious one."

— Robertina Šebjanič, from her video essay *Piscis ludicrous / Transfixed Gaze (Lygophilia)*, 2018

Beyond the reduction of their habitats, axolotls are facing other threats such as the pollution of their waters resulting from various human activities and the domination over their ecosystem by Chinese carp and tilapia, a fish from Africa, both of which were introduced to the canals in the 1970s and 1980s to support aquaculture.

"[...] The aquatic habitats of Xochimilco deteriorated after the fall of the Aztec empire. The pace of deterioration was gradual and subtle until the middle of the twentieth century. [...] the rate of deterioration increased precipitously as Mexico City more than tripled in size between 1950 and 1975. [...] By the early 1950s, Xochimilco no longer received inputs from springs and rivers. In a short period of time, the valley became an endorheic basin with very little water, and the chemistry of much of the available water became alkaline, salty, and polluted."



— ‘A Tale of Two Axolotls’, S. Randal Voss, M. Ryan Woodcock, and Luis Zambrano, *BioScience*, December 2015 / Vol.65 n°12, pp. 1134-1140

<https://academic.oup.com/bioscience/article/65/12/1134/223981>

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Previous solutions to restore and protect the Xochimilco system have not been successful. And, the axolotl population continues to decrease at a dramatic rate. Alternative approaches, including sharing good practice regarding survival conditions for the axolotls and, at the same time, ensuring good living standards and economic conditions for the humans, are being experimented with. Time will tell...

"High-quality water benefits axolotls and humans."

— ‘A Tale of Two Axolotls’, S. Randal Voss, M. Ryan Woodcock, and Luis Zambrano, *BioScience*, December 2015 / Vol.65 n°12, pp. 1134-1140

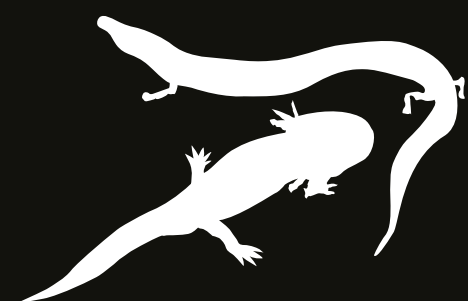
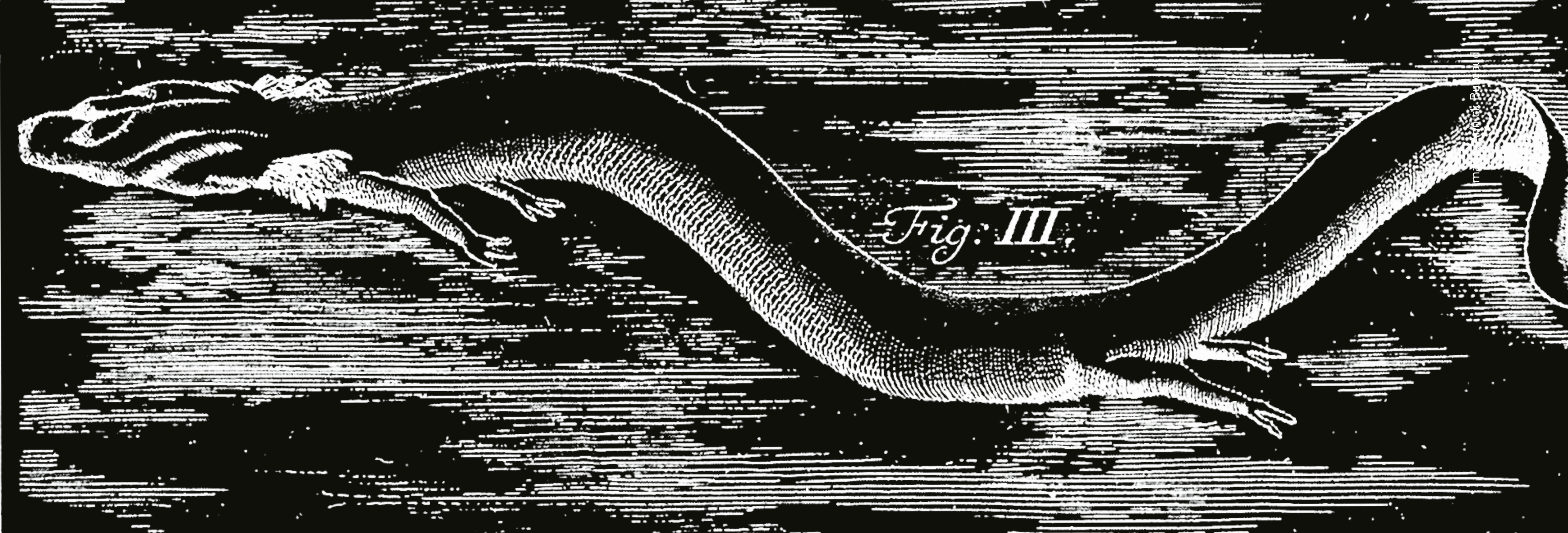
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<https://doi.org/10.1093/biosci/biv153>

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English editing by Ana Čavić





Scientific animals

Part 1 : *Becoming 'scientific'*



Scientific animals

Part 1 : Becoming 'scientific'

Like many other creatures, axolotls and proteus became 'scientific' in the late 18th and throughout the 19th centuries following the rise and development of Western scientific methodology and the growing passion among the general public for the wonders of 'nature' and the 'wild'—both of which were simultaneously encountering the threat posed by the Industrial Revolution and by this very same enthusiasm. It was the time when natural history museums displayed specimens in jars of formaldehyde and built dioramas such as those at the Vienna Museum (Austria).

Siredon mexicanum <Shaw>
Axolotl <geschlechtsreife Larve>
<Wasserform> Mexiko



image © Annick Bureau

"Grottenolme (*Proteus anguinus* Laurenti) in einem Karsthöhlengewässer"



image © Annick Bureau



BECOMING SCIENTIFIC: ONCE UPON A TIME...

The story of the 'discovery' of both axolotl and proteus borrows from the same narrative patterns and has produced a similar iconography some example of which can be seen in the *Lygophilia* installation.

The stories are passed along, in the many articles about the animals, almost as tales, or even myths, which could start with: "Once upon a time..."

The first **axolotl** arrived in Paris as a gift from Alexander von Humboldt to Georges Cuvier. Then, in 1863, some sources say 1864, six living *Ambystoma mexicanum* reached the Muséum d'Histoire Naturelle where zoologist Auguste Duméril was working.

This is the official history of the beginning of the axolotl as a scientific animal. From Paris, they were distributed all over Europe and even the United States among scientific institutions and scientists — all coming from those "originals six", at least up to 1914.

"The axolotl makes at least two entrances into the theatre of European taxonomy. The first is via the pen of Francisco Hernandez, a sixteenth-century Spanish naturalist who recorded its native Nahuatl name and came up with *piscis ludicrous* — the ludicrous fish. The second is in 1789, when the English zoologist George Shaw, who was also the first European scientist to examine a platypus, assigned it a place in the Linnaean firmament. In 1800 the German naturalist Alexander von Humboldt shipped two live axolotls, along with fossilized giant elephant bones and other goodies, to Georges Cuvier (...) in Paris. Cuvier decided axolotls were the larval form of an unknown air-breathing species and seems to have left it at that. It was not until sixty years later that scientists, also in France (...) first studied one of the axolotl's most remarkable features: the fact that it was a reproducing adult even though it looked like a 'tadpole' — that is, a juvenile — but that it could also, mysteriously, transform itself into what looked like another species altogether. Unaware of their neoteny, Auguste Duméril was surprised



when he found in the vivarium a new species, similar to the salamander. This discovery was the starting point of research about neoteny, the juvenile features in the adult animal.

(It is not certain that *Ambystoma velasci* specimens were not included in the original shipment,)"

— **Caspar Henderson**, *The Book of Barely Imagined Beings. A 21st Century Bestiary*, Chicago, The University of Chicago Press, 2013.

1 • The following history of the discovery, the first description and knowledge about the proteus borrow from the following texts: - 'Human Fish' in *Proteus, the mysterious ruler of Karst darkness*, Marko Aljančič (Redactor), Vitrum Ltd, Ljubljana, 1993. [out of print]-Gregor Aljančič, *History of Research on Proteus Anguinus* Laurenti 1768 in Slovenia, *Folia Biologica et Geologica*, 60/1, 39-69, Ljubljana, 2019. <http://dx.doi.org/10.3986/fbg0050>

The **proteus**¹ did not have to cross an ocean and connect continents to attract the European scientific elite's attention. It was already there, but pretty much as 'exotic' as the amphibian from the other side of the Atlantic with which it shares some features such as neoteny (the capacity to reproduce as a juvenile) and regenerative possibilities (the capacity to regrow body parts when cut or removed).

The first known written mention of the animal is in the publication *Die Ehre des Herzogthums Crain* ('The Glory of the Duchy of Carniola', Laybach & Nürnberg, W.M. Endter) by Baron Janez Vajkard Valvasor, published in 1689. He reports a legend explaining the intermittent karst spring of Lintvern, near Vrhnika, by the presence

and movements of a dragon living inside the mountain. Although the postman confirmed that he had caught a "baby dragon" about 20 cm long, Valvasor did not believe in dragons and concluded it was just some kind of lizard or vermin and did not investigate further.

Proteus entered the scientific realm in 1768, when it was described by the zoologist J.N. Laurenti in his publication *Specimen medicum, exhibens synopsis reptilium emendatam cum experimentis circa venena et antidota reptilium austriacorum* (Vienna, Joan Thomae). The natural scientist and physician Giovanni Antonio Scopoli, from the city of Idrija, had come across living proteus specimens, some of which he sent, preserved in alcohol, to other scholars. This is how Laurenti first encountered the animal, when he visited the priest Sigismund Hochenwart who had been one of the recipients. Scopoli, thereby, lost the announcement of the discovery of a new species to Laurenti. Laurenti named the animal *Proteus anguinus* after the shepherd of sea creatures, the Greek god Proteus, and "anguinus" because of its snake-like body shape.

Travelling all over Europe, axolotl and proteus visited the most famous scientists of the time including Georges Cuvier, Jean-Baptiste de Lamarck, Alexander von Humboldt, Carl Lin-



naeus and Charles Darwin; all of whom were establishing the foundations of modern knowledge about nature and all kinds of living creatures. Collectively, they contributed to the emerging field of natural science by designing the modern laboratories and museums and by developing the methodologies and cultural conceptions that have prevailed until recently and are, for some, still valid.

Before turning into the biotechnological and lab animals that they have since become, in this first period, the scientific issues pertaining to both axolotl and proteus had to do with describing them as precisely as possible (using, among other tools and methodologies, wonderful drawings and illustrations), defining what exactly they were (larvae or adults) and identifying the correct zoological classification to which they belonged.

→ WHICH, TODAY, IS THE FOLLOWING:

	AXOLOTL <i>Ambystoma mexicanum</i>	PROTEUS <i>Proteus anguinus</i> Laurenti 1768
PHYLUM	Chordata	Chordata
CLASS	Amphibia	Amphibia
ORDER	Caudata	Urodela

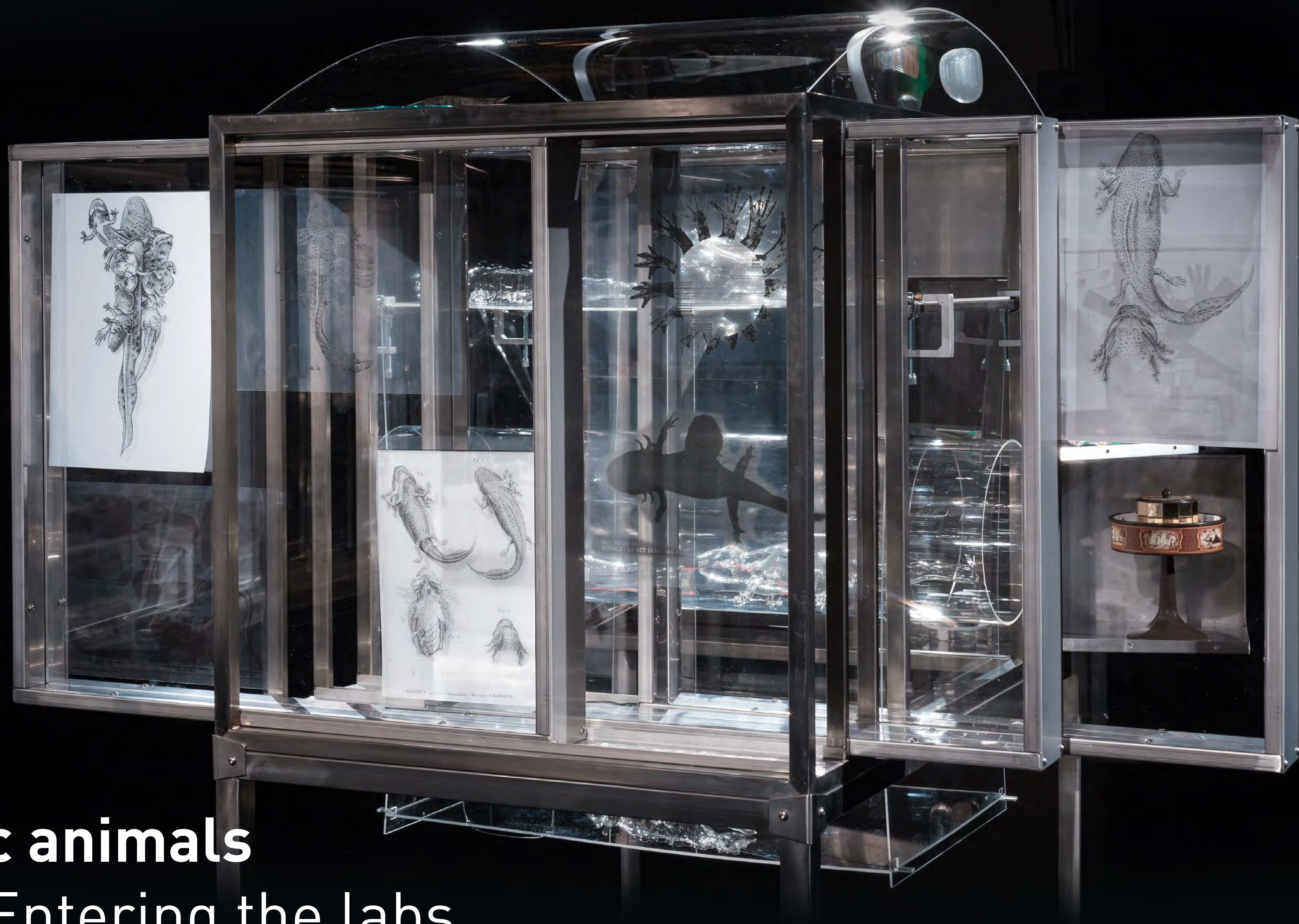
A. Bureaud
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Scientific animals

Part 2 : Entering the labs





Scientific animals

Part 2 : Entering the labs

After having been put in the right zoological box, very early on our two amphibians left their status of *curiosités* to become objects for humans self-interests.

Their amazing physiological and biological capacities, such as their regenerative ability, easy organs transplantation, and extreme longevity in the case of the proteus¹, have made them as fascinating as a golden mine for the scientific and medical research as well as for the cosmetics industry.

This is how they entered the labs — especially the axolotl, since it is easy-going in an aquarium where it reproduces and lives well. Paradoxically, this saved its life. Severely endangered in its natural environment, it found refuge in laboratory aquariums where its population has increased from the 19th century onwards, in return for some extreme experiments.

¹ • Y.Voituron, M. de Frapoint, J.Issartel, O. Guillaume, and J. Clobert, 'Extreme lifespan of the human fish (*Proteus anguinus*): a challenge for ageing mechanisms', *biology letters*, (2011) 7, pp. 105-107, published online 21 July 2010

<https://royalsocietypublishing.org/doi/10.1098/rsbl.2010.0539>



Grafting and regeneration



image: Miha Godec

The beautiful, but peculiar, two-headed blown glass sculpture in the *Neotenous Dark Dwellers - Lygophilia* installation is not a fantasy of the artist but an evocation of actual manipulations that axolotls have undergone and are still undergoing.

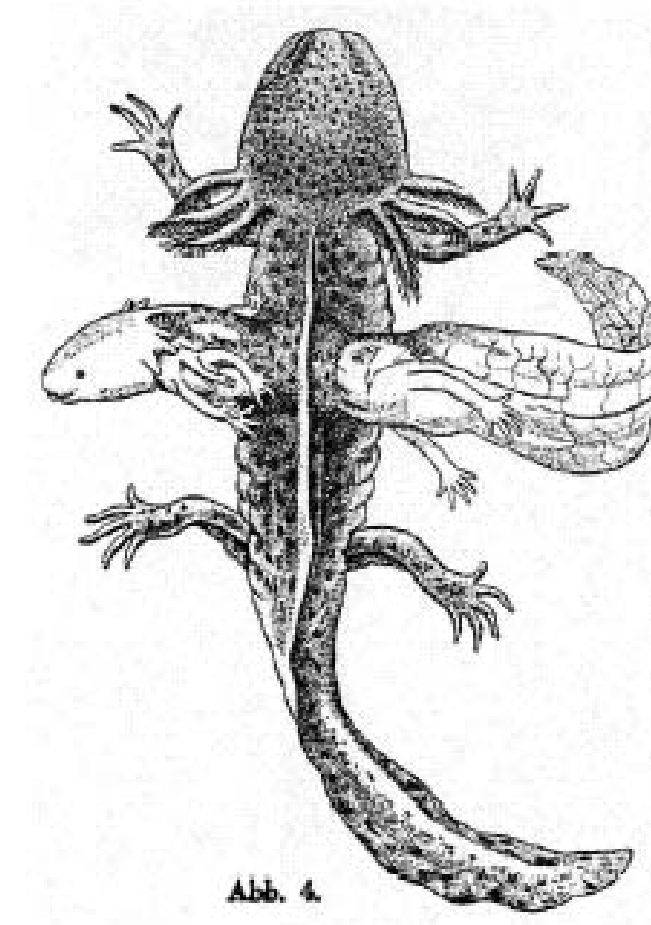
Experiments on axolotls started as early as the beginning of the 20th century. For instance, in the 1910s/1920s, the British evolutionary biologist Julian Huxley who, later on, became the first director of UNESCO and a founding member of the World Wildlife Fund (WWF), experimented on axolotls at University of Oxford.

Scientists were not only working on the amphibian's capacity to regenerate body parts, by cutting them off to understand

how they regrew, but also on grafting one animal onto another or performing organ transplant operations—including head transplants.

For instance, after World War II, Georg Schneider, a Lysenko's follower working at the University of Jena, then in Eastern Germany, undertook grafting research combining white and dark axolotls.

In their article, Uwe Hossfeld and Lennart Olsson reproduce this drawings from 1947.



The caption reads:

"Fig. 4. Example of an experiment using the Propfung technique. A small white axolotl has been put under the dorsal fin of a black axolotl. In the original figure caption, Schneider writes '...shows clearly, that [...] the skin of the black axolotl has grown over, and been overgrown by, the skin of the white axolotl [...] In addition, it can be clearly seen that this animal developed rather normally on the back of the other animal. It did not eat anything itself, but received all its nutrients from the Hypoboint (the host animal). [...] This animal lived for more than 2.5 years.' (Schneider, 1947)".

'Between Science and Politics: Axolotl Research at Jena University, Germany During the Lysenko Era (1950s - 1960s)', Uwe Hossfeld and Lennart Olsson
https://www.researchgate.net/publication/286871170_Between_Science_and_Politics_Axolotl_research_at_Jena_University_Germany_during_the_Lysenko_era_1950s-1960s



We cannot help but shiver when reading this description, especially as we understand that head and brain transplants as well as limb regeneration are at the core of current research.

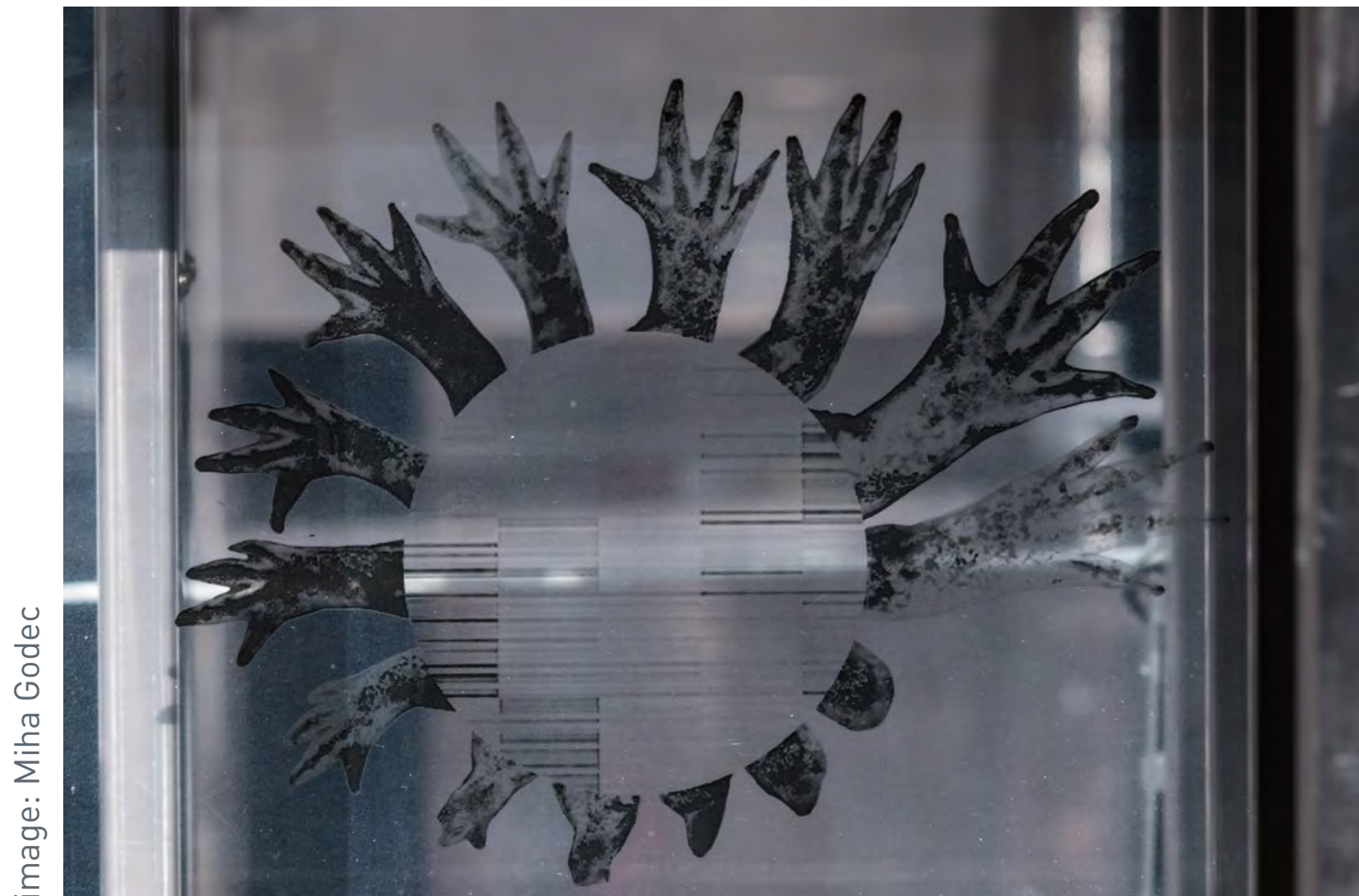


image: Miha Godec

This image dating from 2012, also included in Šebjanič's installation, shows the steps in axolotl limb regeneration, from The Monaghan Lab, Northeastern University College of Science, Boston, Massachusetts, USA.

https://web.northeastern.edu/monaghanlab/?page_id=58

Curing

Axolotls were used in traditional remedies for tuberculosis and various respiratory system diseases. Some remedies are still sold in *Mercado de Sonora* (Sonora Market) in Mexico City.



image: Miha Godec

From the 20th century onwards, the axolotl has been used to cure humans but on a different level and in a different manner. Today, it has become an important biological lab model for a wide range of medical research: the development and functioning of organs; the role of hormones (among them the thyroid hormones) and genes; cell differentiation in embryos;



tissue repair; the development and evolution of cancer; and all that is linked to regenerative medicine, from curing paralysis and growing healthy organs to reversing aging and the damage it causes, not only to how we look but also to our cognitive processes.

The dream of immortality and eternal youth

"Axolotls hold onto their feathery gills and stay in the water for their entire lives. It's as if they never grow up"
writes Erik Vance in 'The Axolotl Paradox'

<https://www.nature.com/articles/d41586-017-05921-w>

Axolotls or the perfect 'Peter Pans', forever young. They can repair themselves without plastic surgery or anti-wrinkle moisturising cream. If we can understand how they do it, no need for cryogenics or cloning, but the prospect of a fit extended life.

However, currently, axolotls are at risk of being endangered also in laboratories due to a too high level of inbreeding that makes them vulnerable to all sorts of diseases.

"Scientists worry that if a new infectious disease were to race around labs world-wide, it might force them to abandon the axolotl, potentially setting research back by years.

What's more, no one can be sure that lab axolotls haven't already diverged so much from their wild counterparts that they have lost key elements of regeneration."

— 'The Axolotl Paradox. An iconic salamander species, celebrated and studied around the world, is racing towards extinction', Erik Vance, *Nature*, Vol. 551, 16 November 2017, revised 15 December 2017

<https://www.nature.com/articles/d41586-017-05921-w>

In our quest for immortality we should remember that even axolotls can die.

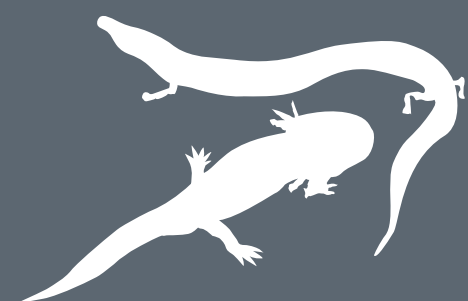
A. Bureaud

English editing by Ana Čavić





image: Annick Bureau



— Gift and souvenir animals

A white chocolate proteus
on a dark chocolate base,
displayed in a wooden
box and sold as a
Slovenian souvenir.



Gift and souvenir animals

Be it in the scientific realm, in fictional stories or in more mundane contexts, truly documented information about the proteus starts to be available in the late 18th and in the 19th centuries. This period of the Industrial Revolution was a time when people left the countryside for the cities or, better said, their suburbs, cutting themselves off from what had been their 'roots' and from their relationship with nature. Simultaneously, along with the industrial innovations, it saw the emergence and structuration of modern science, its concepts and methodologies, especially of natural science. Those lead to a renewed interest in, and 'discovery' of, the Living and Nature. It is at this time that the proteus became both an 'object' of science and a 'living souvenir'.

Animals as Gifts

→ The animal as a curiosity

Local people knew of the proteus and sold it, at least since the mid-19th century, as living souvenirs and curiosities to visitors of the region, especially those visiting the caves where it lives. Today, proteus can be collected for research purposes only with permission of the National Administration for Nature and Environment Protection.

By way of comparison, it is interesting to consider the case of the axolotl: although it is endangered in its natural habitat, it reproduces well in captivity with the unforeseen consequence that it has become a 'pet' in our early 21st century. In populating more and more private aquariums it is, in a sense, replaying its prior status of being a 'curiosity' animal, a 'gift' you could offer to a friend.



→ The animal as scientific gift object

In the 19th century, some proteus were bought by laypersons and brought home as curiosities, others were offered to zoos and still others were bought by, or sent to, scientists as scientific objects to be researched and documented. J.N. Laurenti, who first described the proteus in 1768, had been made aware of the animal through the research of G.A. Scopoli, a doctor from Idrija.

Among the famous naturalists, researchers and scientific institutions that received such a precious gift we can mention:

- Charles Babbage, known for being the inventor of the analog computer, visited the Adelsberg [today called Postojna] cave in 1828 and purchased six proteus, all of which died en route.
- Charles Darwin, who had mentioned the proteus in his book *The Origin of Species*, was offered one by the geologist Hugh Falconer who had visited Postojna cave in 1861. Darwin



believed he could not provide good living conditions for the animal and it was gifted to the London Zoo.

- Carl Schreibers, Director of the Naturhistorisches Museum (Natural History Museum) in Vienna, first received a dead preserved specimen from Scopoli and, later, some from Baron (Sigismund) Žiga Zois. Of course, also living ones reached the Museum. A preserved proteus can be seen today at the Museum.

- In 1900, the Muséum national d'Histoire naturelle (Natural History Museum) in Paris received 30 proteus from Armand Viré, speleologist and director of the Museum's underground laboratory (set up in the Parisian catacombs), who had obtained them when he visited the Slovenian caves earlier that year.

All sorts of animals and plants, from all over the world, were



sent to various (European) museums and institutions at that time by knowledgeable and curious travellers as 'gifts'. It is in this same period, in 1863, that six adult axolotls (the number varies depending on the source) were shipped from Mexico City to the Jardin des Plantes, the botanical garden in Paris that is part of the Muséum national d'Histoire naturelle.

Today, animals can be exchanged between labs—strictly speaking, no longer as 'gifts' (although this can be discussed), but as “scientific material”—in order to maintain genetic diversity and allow for valid and robust research to be pursued.

→ The animal as diplomatic gift

The proteus was added to the list of rare and endangered species in 1982. However, Slovenia had started a protection programme for cave faunas already in 1922 and proteus has been nominally protected since 1951. Its strange physiological nature surely made it an even more high status gift, especially in the diplomatic context. As reported by Trevor Shaw in the 1960s, when Slovenia was part of Yugoslavia, about five proteus from Planinska cave were given by President Tito to Emperor Hirohito of Japan, himself a biologist.

Animals that used to be eaten

It is reported that the proteus was not only sold as a curiosity, but also in a fish market, in Trieste, at least during the 19th century. The nature of the animal had been uncertain for a long while, during which, at times, it had been considered a fish.

On the other side of the Atlantic, axolotls were eaten too but up to a more recent time. It is actually said that they are still eaten and if not, they are still used in popular moisturising cream and cough medicine.

Slovenian chocolate souvenir

Nowadays, proteus are a highly protected species and if they are still eaten and brought back as souvenirs, it is in the form of chocolate that one can buy in Ljubljana. Ironically, this symbol of, and souvenir from, Slovenia is now made out of an imported vegetal, opening dense woven and crisscrossed cultural appropriations.





Our information about proteus as gifts and souvenirs in the 19th century is based on two articles by Trevor R. Shaw. The first one is an in-depth research article with publication of original material and quotes, the second one is a more condensed, but also expanded, version of the first.

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A. Bureaud

English editing by Ana Čavić



Trevor R. Shaw, 'Proteus for Sale and for Science in the 19th Century', in *Acta Carsologica*, 28/1, 15, Ljubljana 1999, pp. 229-304.

<http://devonkarst.org.uk/Proteus%20Project/shaw.pdf>

Trevor R. Shaw, 'Proteus for scientists and tourists. A history of its 19th century collection and captivity', in ENDINS, n°28, Mallorca 2005, pp. 51-60.

<https://core.ac.uk/download/pdf/39094883.pdf>



National animals



National animals

Obviously neither axolotls nor proteus own passports, or citizenships. How could they? They are not citizens. They do not have that many rights as living creatures either...

If they are from a territory, they are not from a Nation. However, both are 'national'—or 'nationalised'— animals and of course it is self-evident that if axolotls are 'Mexican', proteus is 'Slovene' like pandas are 'Chinese'.

Many animals have become national emblems (the 'USA' bald eagle or the 'French' rooster) and some, such as the panda, have been used as 'diplomatic gifts' to soften international relations.

Displayed on this shelf of the Proteus Cabinet, one can find under glass domes and a petri dish cap, a set of coins, a stamp and a patch reading "Slovene Space Agency".

Coins and stamps are a prerogative of the State: only the Nation State can legally issue stamps and currency (at least up to the time of writing, in 2019).



image © Miha Godec

→ Coins

In 1991, Slovenia became independent from Yugoslavia, before joining the European Union in 2004 and, in 2007, the Eurozone. Between 1991 and 2007, the Slovene currency was the tolar. Among the coins, the 10 stolinov (10 cents) showed a proteus on the reverse. At that time, all the coins issued by the new Republic showed animals that live in Slovenia on the reverses. The coins were designed by Miljenko Licul and Zvone Kosovelj,



and modelled by the sculptor Janez Boljka.

The different coins were put into circulation at different times: the 10 stolinov coin was released on April 29, 1993 at the same time as the 20 stolinov coin.



<https://www.bsi.si/en/banknotes-and-coins/slovenian-tolar>

→ Stamps

There are countless stamps with animals on them, all over the world. The proteus had to be on Slovenian ones. The one displayed as part of *Lygophilia* was released in 2018 to mark the 250th an-

niversary of the first scientific description of *Proteus anguinus*.

<https://en.posta.si/PersonalSite/bulletins/Bulletin%20121.pdf>

(See pages 26 and 27 of the pdf PDF document)

But, it was not the first time that the animal had been pictured on a Slovenian stamp. One had been issued already in 1993

<http://www.istrianet.org/istria/philately/currency/slo-proteus.htm>

and it can also be found on this stamp from 1954, at a time when Slovenia was part of Yugoslavia (there is a blue version of the same stamp).

Moreover, in Postojna cave, one of the major places where proteus can be seen, a post office opened as early as 1899 so that people could write to their friends and relatives about all the wonders they had seen.

<https://www.postojnska-jama.eu/en/wonder-land-stories/the-worlds-only-cave-post-office/>

Interestingly, at that time, the cave was part of the Austro-Hungarian Empire, hence the post office was Austrian. Later on, it became Italian, then Yugoslavian, and now solely Slovenian.





1 • The following information about this patch owes to an email exchange between Annick Bureau and Marko Peljhan in the Summer of 2019.

→ Slovene Space Agency Patch¹

This patch is for sure a Slovene singularity. Everywhere else in the world, Space Agencies are State institutions and the patches they produce are fully under the control of State organisations.

This patch, reading "Slovene Space Agency", was designed by the designers Boris Balant and Primož Pislak and the artist Dragan Živadinov as part of the art project *Biomehanika Noordung* in the Spring/Summer of 1999, at a time when there was no Space Agency in Slovenia.

Peljhan writes:

"The patch was used during the first three *Biomehanika Noordung* flights². In 2001, Dragan, Primož and myself presented the initiative to start the Slovenian Space Agency during the Noordung days at the Academy of Sciences in Ljubljana".

As of 2019, the institutional interface for space activities in Slovenia is the Ministry of Economic Development and Technology.

Slovenia signed an Association Agreement with ESA, the European Space Agency, in 2016. Earlier, the first Cooperation

Agreement, signed in 2008, was followed by the European Cooperating State (ECS) Agreement in 2010. Also in 2010, the Slovenian Centre of Excellence for Space Sciences and Technologies SPACE-SI was established by a consortium of academic institutions, high-tech SMEs and large industrial and insurance companies

<http://www.space.si/en/about/>

The patch shows two proteus wearing helmets: one is set against a blue background

that can be read as a reference to water and to the planet, but also to the sky; and the other is set against a white background that can be read as outer space, but also as the ground of the cave in which the animals live.

Peljhan continues:

"The Proteus is there because of the symbolic connection



2 • ed. note: parabolic flights during which periods of weightlessness can be experienced. They took place at Star City, the Russian Center for Cosmonauts Training



to Slovenia and because we call it a human fish and because it is extremely fragile. It is also inverted in water too, because we have lots to explore right here, since we ARE in space also when on Earth".

→ **From National to Nationalistic and Cultural Appropriation**

Many countries put animals and plants on coins and stamps. Most of them are simply representative of the fauna and flora of the country or, to put it differently of this portion of earthian territory shared by a group of humans and other than humans. However, in specific historical contexts, some animals and plants may become more than that; they may come to be deeply associated with a feeling of national belonging and identity by the human population. This is the case of the proteus, which has become part of Slovenia's cultural heritage.

It is worth noting that research into this animal is one of the oldest uninterrupted natural history projects in Slovenia since the time of Janez Vajkard Valvasor who mentioned it in his major work *Die Ehre des Herzogthums Krain* (The Glory of the Duchy of Carniola), in 1689.

The proteus has also been associated with the oppression of Slovenes at the beginning of the 20th Century.

In his article 'Traveling Olms: Local and Global Perspectives on the Research of *Proteus anguinus* (1700-1930)', Johannes Mattes writes:

"Although *Proteus* quickly gained global recognition during the 19th century, the olm became simultaneously a symbol of locality and regional or national situatedness. While the natural history collections in many schools of the Austro-Hungarian Monarchy were equipped with specimens of *Proteus* during the 1890s, the public perception of the olm was linked closely to its habitat in the Dinaric karst and the Habsburg Empire. [...]

After World War I, when Italian forces took control over major parts of Slovenia, [...] as Italian officials increasingly oppressed the use of Slovenian language and literature and the local population began to meet secretly in caves [...] to practice their language, also *Proteus anguinus* became a symbol of national natural heritage and Slovene identity.

[...] Therefore, it is not astonishing that the first popular scientific magazine in Slovene language, published in 1933, was called «*Proteus*».

In the leading article of the journal's first issue, the



editor claimed the cultural and scientific significance of the Proteus for the Slovene speaking population by emphasizing the need of local research and nature protection:

The whole world participated in the research on *Proteus anguinus*. Nevertheless, it is our olm, the olm of your people.

And this is perhaps the only example in the history of science that the local people, the local scientists have the final say. The Proteus is a symbol of tough research, a symbol of scientific knowledge, a symbol of local research and their mission for protecting our national natural heritage."

<http://doi.org/10.26337/2532-7623/MATTES>

https://www.researchgate.net/publication/328171971_Traveling_Olms_Local_and_Global_Perspectives_on_the_Research_on_Proteus_anguinus_1700-1930

Building on their rich natural research history as well as their own history, people bonded with the proteus on many levels, connecting local and global knowledge, popular vernacular science and specialised academic science, humans and amphibians.

It seems it is a small step, turning animals or plants from *national* into *nationalistic* "objects" as reported by Giovanni Alois in his article 'Sorely visible: plants, roots, and national identity', which appeared in *Plants, People, Planet*, in 2019, about palm and banana trees being instrumentalised as the symbol of the "invasion" of "Christian" Italian-Europe by "Islamic culture".

<https://doi.org/10.1002/ppp3.10054>

He writes:

"In the middle of a cold night, in February 2017, Starbucks Coffee Co., in collaboration with Italian architect Marco Bay, installed a grove of palm and banana trees opposite Milan's much-loved gothic cathedral. Public opinion instantly split. Milan's rude awakening revealed a tale of two cities: on one side were those who lauded the initiative and on the opposite were those who condemned the trees' exotic origin as unrepresentative of true Italianicity. Against the backdrop of strained relationships between Italy and the European Union, due to the handling of North-African and Middle-Eastern diasporas, palms and bananas have found themselves at the center



of an unexpectedly acrimonious public discussion.

[...]

Today, everything upsets and offends someone, somewhere; and that someone's voice will be heard everywhere through social media. The polarization of politics and cultural discourses invites closer, sometimes obsessive, scrutiny of representational dimensions in everyday life, not just in the arts. Appropriation, for instance, is more problematic now than it has ever been, even at the height of postmodernism.”

Although axolotls have appeared in countless stories and poor proteus have changed nationality several times, without even knowing it (as exemplified by the stamps), the use of the animals by 'foreigners' (i.e. by Non-Mexicans in the first instance and by non-Slovenians in the second) in cultural productions is sometimes considered a "cultural appropriation".

It is easy to state that the first cultural appropriation is the one carried out by humans upon the animals. However, the use of animals or plants in human affairs is not a dualistic, good or bad, matter; rather, it is an extremely complex one that must be unfolded with care.

It implies navigating between the decolonisation of peoples and cultures and the decolonisation of nature, making sure that one is not re-imposing on the other.

It implies renewed concepts and definitions of what a 'human' is and an acknowledgement of the mesh of our relations, both with ourselves as well as with the other than humans, on this shared planet — a task being tackled by many anthropologists, ethnographers, philosophers and artists alike.

—

A. Bureaud

English editing by Ana Čavić





Fictional (Stories) animals



Fictional (Stories) animals

'Axolotl', Julio Cortázar, in *Final del juego*, 1956

"Hubo un tiempo en que yo pensaba mucho en los axolotl. Iba a verlos al acuario del Jardin des Plantes y me quedaba horas mirándolos, observando su inmovilidad, sus oscuros movimientos. Ahora soy un axolotl."

"There was a time when I thought a great deal about the axolotls. I went to see them in the aquarium at the Jardin des Plantes and stayed for hours watching them, observing their immobility, their faint movements. Now I am an axolotl."

In this famous short story, written in the first person, which has become a major reference regarding the use of the figure of axolotl in fiction, Cortázar tells the story of a man who goes regularly to the Jardin des Plantes in Paris to see—or to stare at—the axolotls until he becomes one of them, their respective minds having switched bodies.





1 • Renard Jean-Bruno, 'L'axolotl. De la controverse scientifique au mythe littéraire', *Sociétés*, 2010/2 (No 108), pp. 19-32. DOI : [10.3917/soc.108.0019](https://www.cairn.info/revue-societes-2010-2-page-19.htm)
<https://www.cairn.info/revue-societes-2010-2-page-19.htm>

2 • Ed.note: original text in French, translation A. Bureau

According to Jean-Bruno Renard¹, “in this text, the axolotl has inspired Cortázar a story in which the borders between human and animal, past and present, The White Man and the Native, the living and the mineral have been abolished”.²

It can also be read as alluding to exile and displacement that both the animals and the writer encountered as well as a reference to colonialism and the disparition of civilisations. And it certainly refers to metamorphosis: the physical one that axolotls can undertake but also the cultural and psychological one that humans face when relocating to other territories and languages.



‘Axolotl’, Robert Abernathy, in *F&SF (The Magazine of Fantasy & Science Fiction)*, 1954

In this text, written before humans had experienced being in extraterrestrial space and weightlessness, the author imagines that this moment, of leaving the Earth, would reveal our true nature and that

we'd encounter a metamorphosis. Like axolotls, humans would be neotenous beings and would become adult creatures upon reaching outer space.

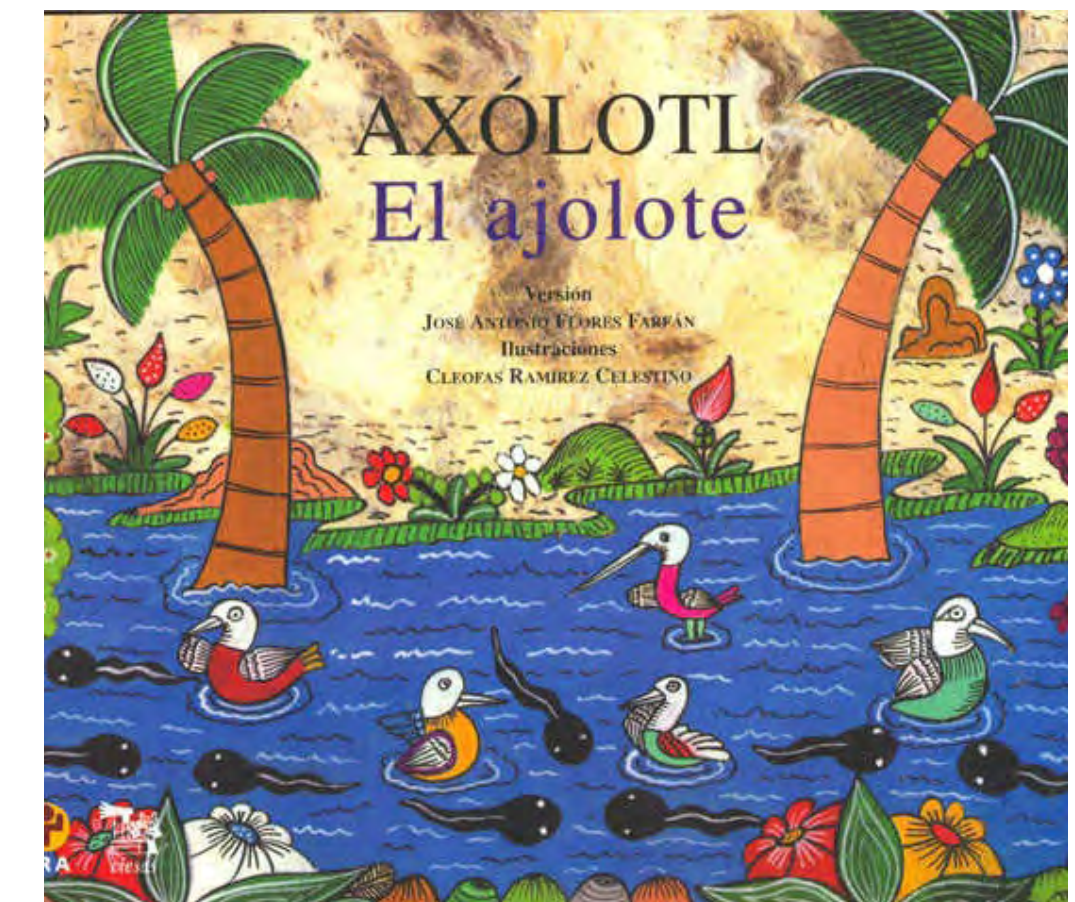


image: Annick Bureau

‘Axolotls’ by Caza, Sci-Fi comics story was first published in French in the comic magazine *Metal Hurlant*, n°78 in 1982

The story weaves influences from Abernathy short story with Greek and Hebraic mythologies, combined with the symbolism of the fire often associated with salamanders. In this story, the animals are anthropomorphized: the "Axolotls" are primitive humanoid creatures living in swamps that, after their metamorphosis, become "Salamanders" that are erect humanoids living in the fire.

This Mexican children’s book, *Axolotl. El ajolote*, by José Antonio Flores Farfán is the fourth item selected by Robertina Šebjanič. It is interesting to note that its title uses the name of the animal both in Spanish and in Nahuatl languages, but as if "Axolotl" was a personal private name of a character and "El ajolote" a quality or an attribute.



Jean-Bruno Renard² underlines that four symbolic meanings can be linked to the axolotl: archaism, considered a reptile and, hence, a primitive animal, the archaism relates also to the fact that it stays in a larval stage; unclassifiable, initially thought of as a fish and subsequently as an amphibian, it has been difficult to put it under the right label; metamorphosis, which is possible but not mandatory; and regeneration, leaving open the possibility of immortality.

Those may be the reasons why the axolotl has been used as a character, a symbol, an evocation etc. in countless productions and languages all over the world, in high and popular culture alike. It appears of course in science fiction and fantasy, but

2 • Renard Jean-Bruno, ‘L’axolotl. De la controverse scientifique au mythe littéraire’, *Sociétés*, 2010/2 (No 108), pp. 19-32. DOI : [10.3917/soc.108.0019](https://doi.org/10.3917/soc.108.0019)
<https://www.cairn.info/revue-societes-2010-2-page-19.htm>



also in general literature and children's stories, books, comics, films, TV series, games, music pieces, theatre plays and in every possible format and medium invented.

This storyfication of axolotls is a rather recent trend that developed from the second half of the 20th century onwards. It does not seem that the animal has been part of many popular oral tales and stories, at least not in the recorded ones, apart from the belief that it could be used to cure ailments.

It is worth noting that the proteus did not meet the same fate, of becoming a fictional character, as the axolotl. And, although its local vernacular names are *human fish* and, sometimes, baby dragon, opening it up to all possible fantasies, as far as popular tales are concerned the only one known is the one reported in Valvasor's *Die Ehre des Herzogthums Krain* (The Glory of the Duchy of Carniola), in 1689. The story explains why water flows from a spring only twice a day, giving a dragon (that lives in the hill behind the spring) as the reason. When the water level rises up to the throat of the dragon it causes it to snort, which makes the water flow from the spring. And this happens twice a day. The proof of this is that, every once in a while, baby dragons can be found in the spring, having been ejected with

the flow. Valvasor, who did not believe dragons were existing, concluded, but without having seen any, that it could just be some sort of lizard...



image: Annick Bureauud

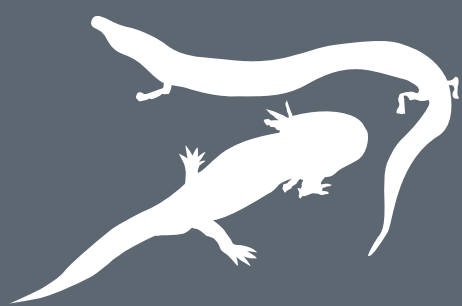
"In July 2018, I visited the Axolotls with Annick Bureauud at the Jardin des Plantes, where they are already since 1863 ... being there at the same spot as Julio Cortázar decades ago and talking about his short story 'Axolotl' where the narrator is transfixed. He experiences his own metamorphosis transforming into Axolotl."

— **Robertina Šebjanič**, email correspondence, September 22, 2019

A. Bureauud

English editing by Ana Čavić





Proteus in a capsule of the early science, an experience from Slovenia

Gregor Aljančič and Magdalena Năpăruș Aljančič

image: Miha Godec



Proteus in a capsule of the early science, an experience from Slovenia

Gregor Aljančič and **Magdalena Năpăruș Aljančič**

Karst is a geomorphological landscape, named after the region of Kras (southwest Slovenia), a limestone plateau above the Gulf of Trieste (Italy). Its monumental phenomena, such as the river thundering into the abyss of Škocjanske jame, fascinated antique writers and travellers along the only practicable road from Central Europe to Mediterranean. Around these karst features also raised early researchers, and through early international scientific cooperation the geographic name became a specific landscape type, recognised around the world. By the end of the 19th century the understanding of karst developed into karst science.

But, this journey of the early modern science could not be completed before the cognition that the dark deserted karst underground actually harbours life. Although the subterranean nature of proteus was already known to famous naturalists of the 18th century Carl Linnaeus and Joannes A. Scopoli, the birth of speleobiology was triggered by the Ljubljana entomologist Ferdinand J. Schmidt with his first description of a cave beetle *Leptodirus hochenwartii* from Postojna Cave in 1832. Only then the eyes of scholars were opened, and all kind of unique blind and unpigmented species become



discovered in caves all over the world. The hotspot of karst research finally revealed the global hotspot of the subterranean biodiversity recognised today. An essential part of this process at the emergence of modern science was the research of proteus.

The Olm or simply proteus (*Proteus anguinus*), in Slovenia known under the vernacular name *človeška ribica* [human fish], is one of the most famous cave animals worldwide. This blind amphibian, a dweller of the subterranean rivers, is strictly endemic to the Dinaric Karst. Of the whole planet, proteus range stretch from the Bay of Trieste in E Italy, through the southern Slovenia and over the background of the Eastern Adriatic coast of Croatia, to Bosnia and Herzegovina, presumably as far as Montenegro on its most southeast corner. It is the only European cave vertebrate, and by far the largest cave animal in the world.



BIOLOGICAL DESCRIPTION 1/2

(adapted from Aljančič M., 1992: *Proteus*, our mysterious “human fish”. Slovenija VI/3: 11-13.)

Scientific name:

Proteus anguinus Laurenti 1768

Other names:

Olm (English),
čovječja ribica (Croatian),
Macarát jeskynní (Czech),
Hulepadde (Danish),
le Protée (French),
Olm or *Grottenolm* (German),
barlangi vakgőte (Hungarian),
il Proteo (Italian),
Odmieniec jaskiniowy (Polish),
Jaskyniar vodný (Slovakian),
človeška ribica (Slovene),
...

Taxonomy

Phylum: Vertebrata

Class: Amphibia

Order: Urodela

Family: Proteidae

Genus: *Proteus*

Species: *Proteus anguinus*

Subspecies: *Proteus anguinus*
anguinus (white proteus), *Proteus*
anguinus parkelj SKET & ARNTZEN 1994
(black proteus)

Characteristics

Well adapted to its environment, proteus has lost its dark skin pigmentation (which may appear slightly in young animals or develop when exposed to light; an exception is the black proteus of Bela krajina) and its eyes which appear as tiny black dots in young animals, later overgrown by skin. Its 20-30 cm long eel-like body mostly has the light pink colour of the skin. Its whole body is sensitive to light, but the hearing, smell and other senses are well developed.

Its head is prolonged, with a flat snout, and its mouth contains up to 200 tiny teeth. Proteus is a predator. Its two widely separated pairs of weak limbs with three toes on the fore pair and two on the hind only play an ancillary role. For swimming it uses its flat tail with fin of skin.

While it has simple lungs, proteus breathes with external gills (three branches from each side of the head), vividly red coloured because of the blood visible through the transparent skin. The male and female vary little from each other in external appearance.



BIOLOGICAL DESCRIPTION 2/2

(adapted from Aljančič M., 1992: *Proteus*, our mysterious “human fish”. Slovenija VI/3: 11-13.)

Natural habitat and geographic distribution

Subterranean streams of the Dinaric Karst.

Food

Predator, preys upon various water animals, mostly crustaceans and other small invertebrates.

Reproduction and lifespan

Not observed in natural habitat (individually found young animals, the smallest about 4 cm). In captivity proteus lays up to 70 eggs (12 mm in diameter, development of embryo takes several months depending on water temperature), in average only every 7-12 years. Proteus sexually matures as larva (neoteny) after about 14 years. Lives up to 100 years.

Relatives

Distant: North American *Necturus*; no relatives among European amphibians.

Origin

Uncertain; relic of Tertiary fauna.

Threats

Recent negative anthropogenic influences come from the intensive agriculture, energy production (karst water damming), and unregulated urbanization (groundwater pumping and sewage disposal).

Legal protection

National nature conservation legislation in countries harbouring proteus, EU Habitats Directive, Bern and Ramsar conventions.



Proteus is a remain of once rich Tertiary fauna, and has no close relatives left. Its ancestors survived Ice ages while adapting to cave life. Proteus ancestors were presumably living in the surface habitats in a system of lakes which existed on the area of the present Dinaric karst about 17–15 Myr ago, before invading the underground. According to the ribosomal DNA molecular clock estimation by Prof. Peter Trontelj and his colleagues at the Department of Biology, University of Ljubljana, the invasion of proteus surface ancestors may have occurred as early as 16 to 8.8 Myr ago, while some of the genetically distinct lineages of proteus seems to split even more recently.

Proteus is not only one of the world's prime symbols of natural heritage, but also played an interesting role at the dawn of the modern science. Particularly in Slovenia, for the last 200 years, this mysterious animal has constantly raised scientific and public attention, and gradually became not only an important symbol of Slovenia's nature, but also a part of its Intangible cultural heritage.

The story of proteus research begins with Janez V. Valvasor, Slovene baroque polymath and empirical researcher, one of the pioneers of karstology. For his study of groundwater flows of the intermittent lake Cerknjško jezero, Slovenia, Valvasor became a fellow the Royal Society of London in 1687. But his fundamental work was the *Die Ehre des Herzogthums Krain* ['The Glory of the Duchy of Carniola'] published



in 1689. There, Valvasor presented a short description of proteus – the world's first published record of a cave animal.

Five years earlier, on 24th of June 1684, when Valvasor was returning from one of his study travels across the Duchy of Carniola (present-day central Slovenia), people from the area of Vrhnika (about 25 km southeast of Ljubljana), told him about the Lintvern, a mysterious spring from which the water flows only twice a day. The next day, Valvasor followed this lead and visited the spring: its periodic flow seemed to have inspired a local legend of a dragon living in the hill behind the spring. Namely, when the groundwater is rising up to its throat, the dragon has to move causing the water to flow from the spring, which happens twice a day. As a proof, Valvasor was told about the finds of young dragons washed-out after heavy rains. Among many eyewitnesses, Valvasor also interviewed the Vrhnika's postal master Hofmann, who described the little dragon he collected two years ago and displayed it to the public. Valvasor finally concluded, that the creature in question was, of course, not a mythological dragon, but an animal shorter than a span, similar to a lizard – in sum, just an earthly reptile, which can be occasionally found here and there.

Unfortunately, Valvasor had never seen the animal with his own eyes, nor heard about it anywhere else, although he visited several proteus localities. In fact, proteus has never been confirmed at the Lintvern nor it is likely to harbour the species. It seems that locals naively linked both phenomena: an exceptionally rare type of intermittent spring was explained by finds of proteus washed-out from many springs around Vrhnika, just three kilometres away.



The first researcher to actually examine proteus was Joannes Antonius Scopoli, a South Tyrolean physician, appointed to the mercury mine in Idrija, Slovenia. There he became one of the distinguished naturalists of his time, with special dedication to fungi, plant and animal taxonomy of Slovenia. In his letter to Carl Linnaeus, dated on 3rd May 1762, Scopoli presents the animal of an unknown amphibian living in caves around Stična (25 km southeast of Ljubljana) with detailed taxonomic description to be included in the next edition of *Systema Naturae*.

It seems that the apparent larval characteristics of the neotenic proteus postponed the publication of Scopoli's description. Linnaeus' hesitation was an opportunity for other researchers. Six years later, in 1768, a Viennese physician Joseph N. Laurenti published his important herpetological book *Synopsis Reptilium*, and included his own brief description and drawing of this amphibian, naming it *Proteus anguinus*. The dilemma of Linnaeus was rejected in the final comment: "Whoever pretends this is just a large larva should show the animal that grows from it, lest he lose his credibility."

After a few echoes on the taxonomic description were settled, proteus seemed to be forgotten. It was Carl von Schreibers, professor of zoology at the Medical Faculty of the University of Vienna, who first studied the proteus in detail. In 1795, while rearranging the museum collection, he found a jar with a half dry specimen not alike any animal he knew. To further explore it, young Schreibers has asked renowned Ljubljana naturalist Žiga Zois for fresh specimens. Schreibers was the first describing the anatomy of proteus, while Zois observed live proteus maintained in his Ljubljana apartment, contributing first descriptions of proteus behaviour, physiology and ecology.



Schreibers presented the results of their research through lectures in London and Paris, published in the Philosophical Transactions Society in 1801. The success was epochal. Unique features of proteus overwhelmed the learned world at that time. Everybody wanted to have this strange and rare animal, but proteus, at that time known to be occasionally washed-out from only a few karst springs in the area of Stična, was extremely rare.

Availability of proteus changed after it was finally discovered in caves of Postojna, its natural habitat, but the demand really increased after discovery of the inner parts of the Postojna caves in 1819, when the cave quickly grew into an international karst tourist attraction, promoting mysterious proteus as its most famous attraction. Live proteus was often displayed to the public in Ljubljana, Trieste and Vienna, and it was occasionally exhibited worldwide, even at the *Exposition Universelle* in Paris, 1863. In Postojna, live proteus were regularly offered as a souvenirs, though only few animals survived for longer periods in inadequate conditions. One such animal which was brought to London in 1861, after 17 days of travel from Postojna by Scottish geologist Hugh Falconer, appear to have more luck. The next day Falconer offered it to his friend Charles Darwin, who was – like Lamarck before him – puzzled by proteus eyelessness. Darwin was probably well aware of the delicate care needed to maintained proteus, so he rather kindly suggested letting proteus to the London Zoo, where indeed Falconer's gift was recorded on 27 June 1861.



Proteus quickly became threatened by excessive collection, focused mostly on a few easily accessible caves around Postojna. Long before his time, Ljubljana's naturalist Franc Hochenwart expressed his concern for the growing vandalism already in 1838. He estimated that in the period between 1800–1838, particularly from the cave Črna jama, over 4,000 specimens were caught, sent to the collections all over the world or sold as souvenirs to the visitors of the Postojnska jama. In the second half of the 19th century, proteus has become so rare in the area, that even the guides of Postojnska jama had difficulties to purchase proteus for tourist display, while proteus became rare also in other caves across Slovenia. The high attention of the public not only encouraged poaching but also attracted researches, and the Postojnska jama became a cradle of speleobiology. However, the nature conservation awareness has only gradually developed. Finally in 1921, the legal protection of caves was finally accomplished in Slovenia, though nominally proteus is protected since 1951.

Excessive collection of proteus has indeed ceased after the World War I, but a new, more serious threat has already appeared – the pollution of groundwater in Slovenia.

Proteus is threatened mostly by raising pollution of karst groundwater. Karst areas are the world's most vulnerable landscapes to environmental impacts. All toxic waste dumped on the surface is washed by precipitation into groundwater, very difficult to remediate once contaminated. Due to extreme longevity of proteus (up to 100 years) even low concentrations of pollutants may accumulate to lethal values in proteus body and its habitat.



About 75% of EU residents depend on groundwater for their water supply. Large part of groundwater is stored in karst, which underlie nearly 35% of Europe, where many important cities, including Paris, Rome, London and Vienna are largely dependent on karst groundwater. In Slovenia, groundwater is serving nearly all water needs.

Proteus as a flagship species of the endangered subterranean biodiversity could symbolise the problem mankind will have to confront – protection of drinking water resources as well as the joint aspiration of conservationists around the world to solve environmental problems in karst landscapes.

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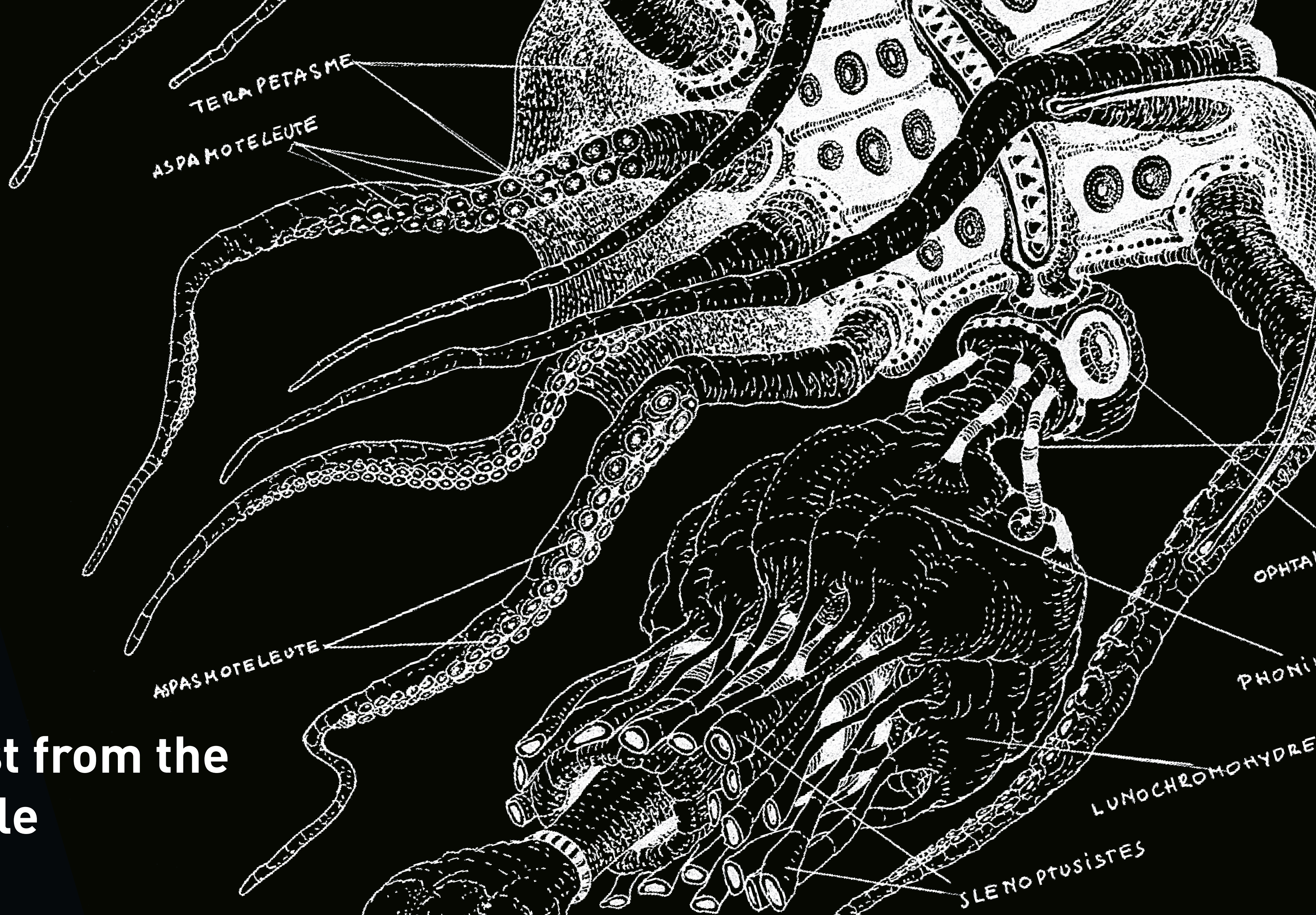
Gregor Aljančič and **Magdalena Năpăruș Aljančič**





The Beast from the Black Hole

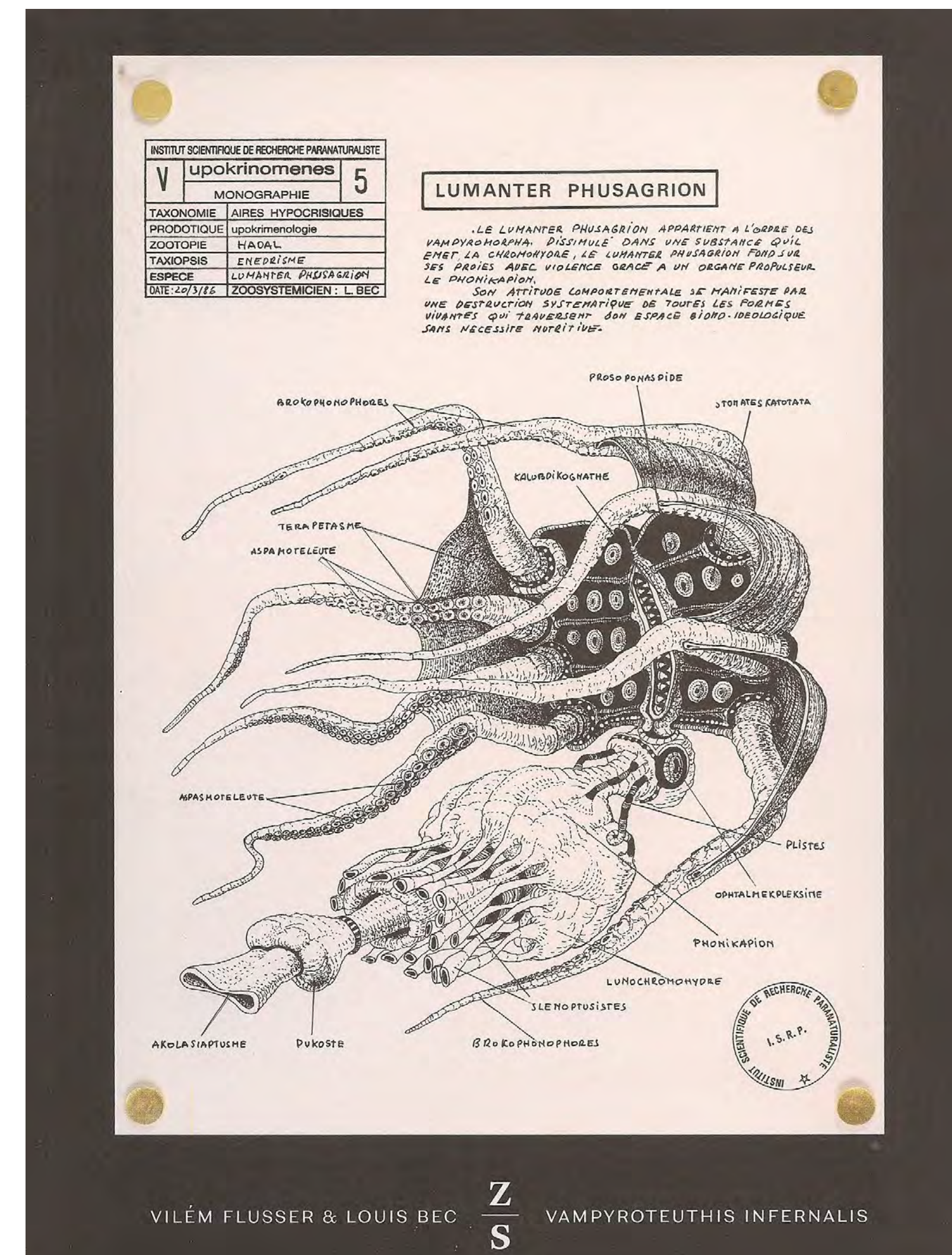
Polona Tratnik





The Beast from the Black Hole

The following paper is written along the art project *Neotenous Dark Dwellers - Lygophilia*, in which Robertina Šebjanič researches the culturalisations of Mexican Axolotl and the Slovenian *Proteus anguinus* as the animals that love the darkness and the places inhospitable for humans. The article addresses the axolotl, the human fish and the deep see squid, their living environments and the relationships with man or man with these animals that live in different worlds than man, but that at the same time inhabit the same planet, where we coexist in mutual dependence. The author examines the human approaches to these animals, which expand from exhibiting the fear of the “power of Nature”, the theoretical admiration and the exercises of human dominance, be it in the form of hero fairy tales or the biopower of regenerative medicine. All of these “classical” attitudes have been very much actual in the modern age and many still are today. The author furthermore questions the eventual posthumanist perspective, which leads to the comprehension of the functional living and non-living systems as connected machines. While the classical relationships between man and animals are based on non-equal power forces and are anthropocentric, the recognition of the environments of different species, which first marked the alienation particularly of some species from man, is at the same time the key to finally recognize the operability of various systems, which are actually connected.



Cover of the book by Vilém Flusser, illustrated by Louis Bec



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For centuries there were stories told and depicted about giant squid or octopus ship attacks. The first known photograph of the giant squid (*Architeuthis*) from Logy Bay, Newfoundland, 1873, shows a dead squid hung on a stand. It is a picture of a powerless corpse and not of a powerful beast, as portrayed in the tales. When Vilém Flusser was working on his book *Vampyroteuthis infernalis*, on the vampire squid from hell, he wrote in a letter to Dora Ferreira da Silva from January 29, 1981: “Please let me tell you of the project that moves me at the moment. Twenty or thirty years ago, a giant cephalopod was fished out of Pacific waters, of difficult taxonomic classification (among the octopi and decapods), which received the name *Vampyroteuthis infernalis*.”¹ Flusser then writes, in continuation of that letter, that the “beast”, as he calls it, inhabits the abysses between 3 and 8,000 meters. The first pictures of an 8-metre-long adult giant squid to be taken in the wild were only taken in 2004 and 2006, in Japan, at a depth of 900 meters. In 2006, the first video of a 12-metre-long animal in its natural habitat was recorded in California. Before that, in 2005, the Melbourne Aquarium bought a 7-metre-long squid preserved in a block of ice. Adult giant squid measure up to 13 metres in length, which is the maximum length of the males; the females reach up to 10 meters. Claims about the existence of a 20-metre-long specimen of the giant squid, therefore, have yet to be proven. Compared with the giant squid, the vampire squid is a small animal—it is about 30 centimetres in length. It is estimated that the natural habitat of the giant squid is in the range of 300 to 1,000 metres below

¹ • Vilém Flusser, *Vampyroteuthis Infernalis*, New York, Dresden: Atropos Press, 1987, p. 136.



the water surface, while the vampire squid lives at a depth of 600 to 900 meters. Both squids survive deep sea conditions, within the oxygen minimum zone. Some giant squids live captured in aquariums worldwide, while the vampire squid survive only up to two months in captivity. The vampire squid belongs to the class Cephalopoda, but is not a squid. The inner side of the arms and tentacles of the giant squid are covered with suction cups, while the vampire squid has suckers only on the distal half of the arms. The vampire squid is actually a passive animal that feeds mostly on bits of organic debris. When attacked, in order to save energy, it diverts the attack away from the central areas with glowing arm tips far above its head. When a predator eats off an arm tip, the vampire squid regenerates it.

This quality, however, is not so relevant for human society, because the animal is not able to live in captivity and scientists cannot do regenerative medicine research. In this regard, it is different to the axolotl. Axolotl is a sort of salamander, the natural habitat of which — the swampy, dark fresh water lakes of the Mexico Valley — is endangered because of urbanisation. Axolotl, therefore, is an endangered species in the wild. Axolotl is a close relative of the tiger salamander, but has external gills and a caudal fin. And yet, even though it is colloquially called a walking fish, it is not a fish. Today, axolotls are extensively used for scientific research because of their ability to regenerate limbs. Axolotl has been researched for over 150 years.

Humans aim to get the knowledge and the techniques to be able to achieve that kind of regeneration for the human species. This objective is oriented towards the notion



2 • See my previous work on this topic: Polona Tratnik, *Conquest of Body. Biopower with Biotechnology*, Springer, 2017.

of the regenerative body,² which is supported by the recent rise and promise of biotechnology. The notion of the regeneration of the body is generating a utopian vision of an immortal active life and body, enabled by a reinforced constant process of vitalisation to triumphantly defeat the natural process of mortification. Eugene Thacker was among the first to point to the new comprehension of the body introduced with tissue engineering: “Tissue engineering is able to produce a vision of the regenerative body, a body always potentially in excess of itself.”³ Because tissue engineering is able to surpass current transplantation problems it is our tomorrow. With regenerative medicine, the economy of body parts (transplantations, xeno-transplantations) has been replaced by the economy of auto-regeneration (regeneration of tissues from one’s own cells), which is cyclic and pro-

4 • *Ibid.*, p. 182.

liferative (productive of a great number of cells with their division).⁴ Perhaps even the bold ambition to re-grow whole human organs or limbs is not so remote. Salamander, axolotl, human fish and vampire squid have the ability to re-grow a whole limb if cut. It is a challenge to comprehend this function, but the interesting thing is that it is actually not foreign to humankind. During foetal development, while the foetus is immersed in a wet milieu similar to that of salamander, this function is in full operation. The human liver can re-grow after damage. The function of re-growth is related to the process of scarring, which protects the body from its dissolution into the external environment and the invasion of the world into the body. Re-growing and scarring stand in opposition, they are dialectical identities. There have been reports that a cut finger has successfully re-grown with matrix treatment (Spievack, 2008). As reported, it was important that the body, wounded during the process of “healing”,

3 • Eugene Thacker, “The Thickness of Tissue Engineering: Biopolitics, Biotech, and the Regenerative Body,” in: Stocker and Schöpf (eds.), *Ars Electronica* 99, p. 183.



was preserved opened. Such acknowledgements force us to rethink issues of identity, body, growth, healing, life etc., which are, at least within the Western context, generally comprehended as self-contained entities and not according to their structural relations. Such is also the prospect of the regenerative body, a body able to re-grow its own parts and treat its own diseases, a body in a constant process of rejuvenation.

The regenerative body, which some animals have, is for humans a wish to be possibly attained with biotechnology, which has become a relevant instrument of biopower as the power over life. In his famous examination of biopower, Michel Foucault highlighted the importance of the historical shift regarding the relations between politics and life, which he located between the ancient era of sovereign power and the modern era of biopower, “when the life of the species is wagered on its own political strategies.”⁵

⁵ • Michel Foucault, *The History of Sexuality, Volume I: An Introduction*, New York: Pantheon Books, 1978, p. 143.

In the modern era of biopower, the social body has the right to ensure, maintain, or develop its life: “the ancient right to *take* life or *let* live was replaced by a power to *foster* life or *disallow* it to the point of death.”⁶ The new regime supported the affirmative politics of life and over life: “Power would no longer be dealing simply with legal subjects over whom the ultimate domination was death, but with living being, and the mastery it would be able to exercise over them would have to be applied at the level of life itself; it was the taking charge of life, more than the threat of death, that gave power its access even to the body.”⁷ The political technologies that ensued—investing in the body, health, modes of subsistence and habitation, living conditions, and the whole space of existence—only proliferated. Therefore, regenerative medicine, which is oriented towards regeneration of life, is

⁶ • Michel Foucault, “*Security, Territory, Population*”. *Lectures at the Collège de France, 1977–78* [11 January 1978], New York: Picador, 2009, p. 138.

⁷ • Michel Foucault, *The History of Sexuality*, p. 142–143.



particularly relevant for modern society. Foucault recognised such relevance already for medicine in general (he paid much attention to the birth of the clinic): “for capitalist society it is the biopolitical that is important before everything else; the biological, the somatic, the corporeal. The body is a biopolitical reality; medicine is a biopolitical

strategy.”⁸ Foucault analysed the emerging institutionalisation of medicine in the context of normalising society, when power took possession of life, or at least took life under its care, in the course of 19th century, a time when “medicine becomes a political intervention-technique with specific power-effects. Medicine is a power-knowledge that can be applied to both the body and the population, both the organism and biological processes, and it will therefore have both disciplinary effects and regulatory effects.”⁹ The role medicine gained for biopower has only been intensified with the emergence of biotechnology.

⁸ • Quoted in: Roberto Esposito, *Bíos. Biopolitics and Philosophy*, London, Minneapolis: University of Minnesota Press, 2008, p. 27.

⁹ • Foucault, “*Society Must Be Defended.*” *Lectures at the Collège de France, 1975–76* (17 March 1976), New York: Picador, 2003, p. 252.

Humans subject the world and use it for its own production. Martin Heidegger paid attention to the being of entities encountered in the environment. The world is for one “present-at-hand” (German *vorhanden*), or it is “ready-to-hand” (German *zuhanden*). The first option means a “simple awareness of something present-at-hand in its sheer presence-at-hand.”¹⁰ The second is very interesting for this discussion.

¹⁰ • Martin Heidegger, *Being and Time*, Oxford: Basil Blackwell, 1962, p. 48.

Heidegger resisted calling different entities in the world as just things, because some “‘things’ never show themselves proximally as they are for themselves”.¹¹ The equipment, for instance, of a room — ink-stand, pen, ink, paper, furniture, etc. — has its equipmentality, in terms of its belonging to other equipment. It has an assignment, or reference, of something to something — the

¹¹ • *Ibid.*, pp. 97–98.



“in-order-to”. Equipment thus shows itself only in dealings, cut to its own measure. The “in-order-to” is therefore constitutive for the equipment we are employing in time. The hammering uncovers the specific *manipulability* (German *Handlichkeit*) of the hammer. The kind of Being the equipment possesses he called “*readiness-to-hand*” (German *Zuhandenheit*). If one just looks, one cannot discover the readiness-to-hand at the outward appearance. But, it is different: “If we look at Things just ‘theoretically’,

¹² • *Ibid.*, p. 98. we can get along without understanding readiness-to-hand.”¹² In that sense I

have discussed the exploration of the human body not as mere looking at the body or pictures of the body, but as an interested observation grounded in a certain theoretical comprehension that is projected upon the observed object. In addition, I have claimed the objective of the exploration of the body has been to get power over it, thus it has been comprehended as something to be manipulated and “improved”.¹³

¹³ • Polona Tratnik, *Conquest of Body*.

Heidegger linked the “ready-to-hand” with the notion of work. Equipment has an orientation, a “towards-which” of its usability, to the work. One is at work on something. The “ready-to-hand” leads to production. “The production itself is a using *of* something for something.”¹⁴ Heidegger also referred specifically to the notion of nature and explained how the “ready-to-hand” applies in this case: “‘Nature’ is not to be understood as that which is just present-at-hand, nor as the *power of Nature*. The wood is a forest of timber, the mountain a quarry of rock; the river is water-power, the wind is wind ‘in the sails’. As the ‘environment’ is discovered, the ‘Nature’ thus discovered is encountered too. If its kind of Being as ready-to-hand is disregarded, this ‘Nature’ itself can be discovered and defined simply in its pure presence-at-hand.”¹⁵

¹⁵ • *Ibid.*, p. 100.

Speaking in Heidegger’s terms in reference to our case, we can formulate

¹⁴ • Martin Heidegger, *Being and Time*, pp. 99–100.



a question: what is the readiness-for-use of axolotl? For humans, as we've seen, it is its instrumentalisation for scientific research, because of its regenerative ability. And, another question arises: what would be the bare presence-at-hand in the case of axolotl?

Proteus anguinus, or the human fish, also has regenerative abilities and exhibits neoteny, similar to axolotl. It lives in the caves of the Karst regions of Slovenia, Croatia and Herzegovina, reaching high age, up to 70 years. It is rather rare to find in its natural environment. It gets sexually mature only after 14 years and it takes four months for the larva to resemble the adult animals. Statistically, only two embryos out of several hundred eggs survive in the wild. In captivity, the first time they managed to get progeny was in 2016, when 22 whelped, 21 of which they have managed to keep

alive until today.¹⁶ The human fish is actually no fish, it belongs to the family Proteidae and to the genus *Proteus*. Because it lives in total darkness, it has adjusted to these conditions. It has very sensitive photoreceptors, chemoreceptors, mechanic-and electroreceptors and can orient itself using the Earth's magnetic field. It has stunted eyes. Charles Darwin mentioned it as an example of the reduction of bodily structures due to disuse. The first scientific description and the name *Proteus anguinus* were given by Joseph Nicolai Laurenti in 1768.¹⁷ The first anatomical examination was conducted not much later by Carl Franz Anton Ritter von Schreibers, in Vienna, to whom the specimens were sent by Žiga Zois. After von Schreibers exhibited the animal in London and Paris, it became globally known and specimens were then sent, from Slovenia, worldwide. However, the animal was mentioned

¹⁶ • "Mladiči človeške ribice kmalu na ogled obiskovalcem Postojnske jame"
Available at: <<https://www.dnevnik.si/1042911837>> November 4th 2019

¹⁷ • *Specimen Medicum, Exhibens Synopsin Reptilium Emendatam cum Experimentis circa Venena.*



about a hundred years earlier, in 1689, by Janez Vajkard Valvasor in his work *The Glory to the Duchy of Carniola* (Slovene *Slava vojvodine Kranjske*) as the whelp of the dragon.

Today, the human fish is a hallmark of Slovenia's natural heritage. It is a symbol of the natural beauty of the country and, because the animal is extremely sensitive to pollution, of the intactness of Slovenia's nature. Reconsidering the human fish in Heideggerian terms, its usefulness applies to tourism and for political goals — it is the country's and national's identifier for a mountainous country, i.e. country full of wild nature, and linked to that, also because of its rareness, as a national identifier, i.e. as a sign of “our” country –, as well as for political strategies, such as for protection of natural heritage and a promotion of sustainable economy. As this comprehension is not exactly the case of readiness-to-hand as Heidegger discussed the cases of equipment and their use in a rather physical form of work, possibly with the use of hands (accordingly to Aristotle, who emphasized the role of hands for the practices he called *technē*), but is here taken more broadly, one might perhaps also speculate to consider the case in such a manner, to give a preference to the presence-at-hand of the human fish and to disregard the readiness-to-hand of it. What would then the human fish be?

An early 20th century zoologist and one of the first theoreticians of ecology, Jakob von Uexküll, who was also a relevant reference for Heidegger, discussed different sorts of environments.¹⁸ He differentiated between the subjective world of animals, *die Umwelt*, and the rather objective environment, *die Umgebung*, which

¹⁸ • Jakob von Uexküll, *Streifzüge durch die Umwelten von Tieren und Menschen*, Berlin: J. Springer, 1934.



he did not find of interest because he emphasised that there is no objective space per se. Instead, there is only a forest-for-a-woodcutter, a forest-for-a-botanic, a forest-for-a-wanderer, etc. The animals, however, operate within their respective *Umwelts*. The bee, the tick and the fly that we observe neither move in the same world nor share the same world with us — the observers. In *die Umwelt* the world and the animal are intrinsically, or existentially, linked. Uexküll considered the case of a tick. The fundamental aspects of the structure of *die Umwelt*, the environments that valid for all animals, can be derived from the example of the tick. Out of the egg crawls a not yet fully developed little animal that, even in this state, can already ambush cold-blooded animals such as lizards, for which it lies in wait. Once the female has copulated, it, the eyeless and deaf creature, finds its way to the warm-blooded animal from which it pumps a stream of warm blood. Uexküll ascertained that the tick uses its sense of smell and has no sense of taste. It takes in any liquid, so long as it has the right temperature. For the tick it is existentially relevant to get the meal: after getting it, the tick will fall to the ground, lay its eggs and die. The tick gets into a “functional cycle as a subject and the mammal as its object.”¹⁹

¹⁹ • Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans*, Minneapolis, London: University of Minnesota Press, 2010, p. 50.

More precisely, in *die Umwelt* there are carriers of characteristics, or of significance. In semiology these would be marks (German *Merkmaltträger*), which are also carriers of meaning (German *Bedeutungsträger*). These carriers are everything that interests an animal. An animal has receptive organs that are assigned to perceive the mark (German *Merkorgan*) and to react to it (German *Wirkorgan*). If one would exchange the tick with a giant squid, one can easily imagine that the squid would have an interest in



the ship in the same way the tick is interested in the mammal. The squid would take the ship as an object in its *Umwelt*. It would suck on it with the numerous suckers on its tentacles. Finally, it would take it down into its world. Flusser considered the vampire squid in its environment, which is the very depths of the ocean, and the ocean as a place that is “brimming with life”, where four-fifths of the biomass is found and where the largest organisms live:

“The lowest level, the ‘benthos’, is the ultimate destination of all life on earth. It is there where all vital energy generated by plankton goes, and where all fertilizing cadavers go. The organisms that inhabit the ‘benthos’, such as walking, swimming and digging animals, form the final link in the chain of life that encircles the planet. There are no plants in this region, only animals that are similar to plants. And Vampyroteuthis dominates this region: he is the lord of all life. So this is the vampyroteuthian environment, his habitat: the centre of the world. The great hole that sucks in all of life. It is permanently vivified by the manna rain that falls constantly. It is eternal night, illuminated by the living rays emanated by the living creatures. And eternal ‘son et lumière’, a show of infinitely variable luminosity and sonority.”²⁰

20 • Vilém Flusser, *Vampyroteuthis Infernalis*, p. 69.

The squid is in this case difficultly ready-at-hand and, since it is also not merely present-at-hand, it is exhibiting what Heidegger called “the power of Nature”. When Immanuel Kant reflected upon nature as a power, he actually discussed the notion the *sublime* or, more precisely, the dynamically sublime of nature. He defined power



21 • Immanuel Kant, *Critique of the Power of Judgement*, New York: Cambridge University Press, 2000, p. 143.

as “a capacity that is superior to great obstacles.”²¹ It is called force (German *Gewalt*), or domination — if it is also able to overcome the resistance of something that itself possesses power. “Nature considered in aesthetic judgement as a power that has no domination over us is dynamically sublime.”²² The aesthetic judgement of the sublime is essentially related to relations of power.

When Kant enumerated the cases from nature, such as the threatening cliffs, thunder clouds, volcanoes with their all-destroying violence, hurricanes, etc., he concluded that “the sight of them only becomes all the more attractive the more fearful it is,

23 • *Ibid.*, p. 144.

as long as we find ourselves in safety”.²³ According to Kant this takes place because we “discover within ourselves a capacity for resistance of quite another kind, which gives us the courage to measure ourselves against the apparent all-powerfulness of nature.”²⁴ Therefore, as Kant continued, this analysis of

24 • *Ibid.*, pp. 144–145.

the sublime as ascribed to power seemed to run counter to the imagined representation of God as exhibiting himself in anger in the forms of thunder, storm, earthquake, etc. Furthermore, if we were to then imagine, in our minds, having any superiority over the effects of such power, it would seem sacrilegious. In submitting to religion, generally, it seems that adoration with bowed head, remorseful and anxious gestures and voice are the only appropriate codes of conduct in the presence of God. Therefore, Kant concludes, “sublimity is not contained in anything in nature, but only in our mind, insofar as we can become conscious of being superior to nature

25 • *Ibid.*, p. 147.

within us and thus also to nature outside us (insofar as it influences us).”²⁵



It was very relevant for folks in past times to circulate stories about the brave third son, the one who had the courage to enter the other, underground world when the ground opened up before him and was then able to rescue the trapped princess and, perhaps, also the old woman under a spell; or about the brave juvenile who defeated the dragon from the cave. These hero stories were modes of operating with the unknown and horrible dark world full of beasts, a way of overcoming, in the folk's minds, the resistance of something that possess power in and of itself and a way of establishing man's domination over that world and the beasts, which also meant overcoming man's own fears.

For Flusser, however, the objective is not to “defeat” the squid/the beast, but to “discover” it in its environment, as a species. So, it seems that there is a difference. His suggestion, as to how to “discover” the vampire squid, is to first get used to the unusual.²⁶ As Flusser is well aware, that abyss is a particular habitat, which is

²⁶ • Vilém Flusser, *Vampyroteuthis Infernalis*, p. 70.

inhabited by Vampyroteuthis, but is not habitable for humans—for the squid it is welcoming, for us it is terrifying. So, how can these two species meet, if they don't live in the same world? “It is difficult for us to catch Vampyroteuthis in nets for fishing as well as those for knowledge. Both of us live separated by an abyss. The atmospheric pressure that he inhabits would crush us, and the air we breathe would suffocate him. If we manage to incarcerate his relative in aquariums in order to study them, they tend to commit suicide, devouring their own tentacles. But we are ignorant of our own behaviour, should he manage to drag us to the deep and incarcerate

²⁷ • *Ibid.*, p. 23.

us under his glass domes in order to observe us.”²⁷ We literally live in differ-



ent worlds, Flusser concluded, which also explains why he took up and subjected the case of the vampire squid to examination. “There is no ‘general world’ or ‘objective universe’ which is common to both. Such abstract world of science does not exist. If we find Vampyroteuthis, it is within our world that we find him. We do not find him as

28 • *Ibid.*, p. 73. existence, but as object.”²⁸ The drawing of the giant squid found in Newfoundland in 1877 speaks of this kind of meeting of man and squid well.²⁹ Flusser even wrote about existential difference, which is the difference between, said in Heideggerian terms, both of our beings-in-the-world, for which no mutual embrace could ever alter such difference and thus: “Every attempt to transform Vampyroteuthis into a human complement is a betrayal of human existence, a dangerous romanticism. It is pointless to try to minimize this: Vampyroteuthis is our Hell.”³⁰

Here we are confronted with the impossibility of these two species meeting in any manner other than in a subject-object relationship, which is a relationship of subordination, be it from the human’s or from the animal’s perspective. It is no coincidence that Flusser — who had been influenced by Heidegger, who built upon Uexküll’s theory, which corresponded so well with that of Kant — came to such a conclusion. Uexküll believed that with the interconnectedness of the subject with the object, in *die Umwelt*, biology finally connected with Kant’s philosophy by emphasising the decisive role of the subject, because there can be no time and no space without a living subject.³¹

29 • See the image. Sarah Zielinski, “Maximum size of giant squid remains a mystery”, *Science News*. 3 June 2016. 5 November 2019. <<https://www.sciencenews.org/blog/wild-things/maximum-size-giant-squid-remains-mystery>>

30 • Vilém Flusser, *Vampyroteuthis Infernalis*, p. 79.

31 • Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans*, p. 52.



32 • Martin Heidegger, *Being and Time*, p. 100.

Is there any other way to conceive of the vampire squid, the human fish or the axolotl, as in any of the ways of culturalisation of these living creatures as examined so far? When Heidegger considered that in the case one would understand “Nature” as just present-at-hand, “the Nature which ‘stirs and strives’, which assails us and enthralls us as landscape, remains hidden.”³² Can one consider the entities in the world not only from the perspective of usefulness? Levi R. Bryant, a contemporary philosopher, who believes his notion of a machine is different from Heidegger’s who claimed that the machine always needs a creator or an operator, is not that far from that thought of Heidegger about “Nature”, which stirs, strives and assail us, with the concept that Bryant has addressed as “a machine”. His conceptualisation of machine is broad, as he claims, “a tree is no less a machine than an airplane”.³³ A machine is an entity that dynamically operates on inputs producing outputs. Bryant, as a materialist social and political philosopher, is interested in how the geographical features of the material world play an important role in the social relations and organisation of societies. Living and non-living structures operate as machines. For Bryant it is crucial that the machines “are formative of human action, social relations, and designs in a variety of ways that don’t simply issue from humans themselves.”³⁴ Bryant’s philosophy is posthumanist. If we consider a tree as a machine, he believes, our comprehension is very different then if we consider it as an object with certain properties: “Rather than regarding the tree as a structure of qualities or properties inhering in a subject, we instead approach it as a system of operations performing transformations.”³⁵ Thus, according to Bryant, the proper question for any machine is: “What does it do?”³⁶ A tree is not a static object, but a processual

33 • Levi R. Bryant, *Onto-Cartography: An Ontology of Machines and Media*, Edinburgh: Edinburgh University Press, 2014, p. 16.

34 • *Ibid.*, p. 22.

35 • *Ibid.*, p. 38.

36 • *Ibid.*, p. 39.



machine that gets some inputs and produces outputs: the tree transforms the flow of water, the soil nutrients, the light and the carbon dioxide that passes through the tree.

The Karst region is the youngest geographical area of the Earth, therefore also the human fish has ‘arrived’ to the caves relatively recently, evolving from an inhabitant of the surface waters, similar to the black salamander, into the species it is today. This most likely took place only after the withdrawal of the glaciers less than 10000 years ago. The Karst limestone caves can be considered a good example of machines as comprehended by Bryant since they organise the life contained within them, including the human fish. Furthermore, the caves connect to other machines such as different sorts of water flows, which move in and out and also shape them—their channels, halls, the water drips that form stalactites and stalagmites, etc. The running waters, however, further connect the machines of the caves with the machines of the outside world, thereby assuring the quantity and the quality of water. The machines of the farms and the cities are connected to the running and underground waters, the fertilisers that enter the soil, get into the waters, also get into the caves. The lives of the people are connected to the lives of the human fish. The wellbeing of the human fish in the caves depends on environmentally sustainable living of man.



Contrary to the human fish, the vampire squid has not transformed much during its evolution, which does not mean that it cannot rapidly change or become extinct. Flusser considered the vampire squid's world as the centre of the world where all life ends, i.e. as our Hell. Today, however, the vampire squid and his abyss are not the beast and the black sucking hole man is to be afraid of; the dangers centre elsewhere: man is not only the greatest stimulator of the regeneration of life, but also the most invasive of all species on Earth.

5 November 2019

Polona Tratnik





Piscis ludicrous / Transfixed Gaze (Lygophilia)

Robertina Šebjanič, 2018

Text from the video essay



Piscis ludicrous / Transfixed Gaze (Lygophilia)

Editor's Note

Under the label 'Lygophilia', Robertina Šebjanič has created a series of works, the installation *Neotenous Dark Dwellers - Lygophilia* being one of them.

The first works in the series are the video essay *Piscis ludicrous / Transfixed Gaze (Lygophilia)* together with the audio composition *Dark Drops (Lygophilia)*. Below is the text from this video essay written by the artist.

*To be a thing at all — a rock, a lizard, a human — is to be in a twist.
How thought longs to twist and turn like the serpent poetry!*

— Timothy Morton, *Dark Ecology*



It is almost impossible for humankind to see axolotls as they are — animals in the process of inevitable extinction.

Piscis ludicrous / Transfixed Gaze intervenes into environments and discusses ecology in order to establish substantial changes in an ecosystem. It explores how to perceive the parameters of the ecological needs of other species in the times of dark ecology. It questions the relationship between mythology and scientific facts merged with popular culture, and invites us to gain a more profound view of interspecies cohabitation and coexistence with a focus on relationship between axolotls and humans.

The axolotl is a neotenic salamander native to North America found in the highland lakes of Mexico. The narratives of the axolotl's complex history, present and future are viewed through different lenses:

- **Axolotl as a species** that is facing extinction in its natural environment;
- **Axolotl as a subject** of scientific research considering its extraordinary regenerative abilities and the promise of everlasting life;
- **Axolotl as a cultural heritage** representing biopolitical and decolonial relations, displaying the connection between mythology in the contemporary world.

Chapter one, page 120:

Arrival to a new world



In 1863 six adult axolotls — *Ambystoma mexicanum* — were shipped from Mexico City to the Jardin des Plantes botanical garden in Paris.

From the end of the 19th century onwards the number of axolotls has increased. They are, however, mostly to be found in laboratories, where their biological advantage, namely their perpetual youth, is thoroughly examined.

The majority of the captive bred population in laboratories and the domestic axolotls found in the world today trace their ancestry to this shipment of six axolotls from Xochimilco that arrived in Paris in 1863.

These animals proved to be well suited for life in captivity. From just five males and one female, the Jardin des Plantes—botanical garden in Paris distributed

thousands of axolotls to scientists as specimens, as well as human companions or domesticated pets throughout the world.

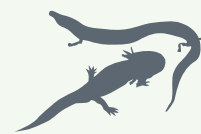
“The axolotl makes at least two entrances into the theatre of European taxonomy. The first is via the pen of Francisco Hernandez, a sixteenth-century Spanish naturalist who recorded its native Nahuatl name and came up with piscis ludicrous – the ludicrous fish. The second is in 1789, when the English zoologist George Shaw, who was also the first European scientist to examine a platypus, assigned it a place in the Linnaean firmament. In 1800 the German naturalist Alexander von Humboldt shipped two live axolotls, along with fossilized giant elephant bones and other goodies, to Georges Cuvier – of the giant primeval swamp salamander fame—in Paris. Cuvier decided axolotls were the larval form of an unknown air-breathing species and seems to have

left it at that. It was not until sixty years later that scientists, also in France (...) first studied one of the axolotl's most remarkable features: the fact that it was a reproducing adult even though it looked like a 'tadpole'—that is, a juvenile—but that it could also, mysteriously, transform itself into what looked like another species altogether. Unaware of their neoteny, Auguste Duméril was surprised when he found in the vivarium a new species, similar to the salamander. This discovery was the starting point of research about neoteny, the juvenile features in the adult animal. (It is not certain that Ambystoma velasci specimens were not included in the original shipment,)"

— Caspar Henderson, *The Book of Barely Imagined Beings*

Chapter two, page 60:

Life in laboratory



It is almost impossible for humankind to see axolotls as they are — animals in the process of inevitable extinction.

From the end of the 19th century onwards the number of axolotls has increased, although only in laboratories.

There they are bred and raised successfully as laboratory specimens. They are a subject of investigation due to their extraordinary biological ability to regrow severed limbs, gills, and tails, as well as to make head transplants. The scientists know the mechanics of these transplants, but they still know very little of the reasons behind this biological process.

Despite all the unknowns the face, scientists are still on a quest to unlock the secrets of regeneration and aging shown by this species, which hide in the very principles of these complex organisms.

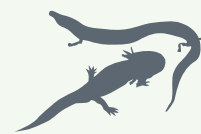
Axolotls have a very rare amphibian capacity. They grow into adulthood without undergoing metamorphosis and therefore live in an everlasting adolescent stage. They are the model species resonating with the desire of humans who long for perpetual youth.

While much effort has been spent on trying to prolong life itself, it is important to emphasize the quality of an extended life for us and the non-human companions we share the environment with...

It is almost impossible for humankind to see axolotls as they are — animals in the process of inevitable extinction.

Chapter three, page 398:

New mythologies



In 1863 six adult axolotls — *Ambystoma mexicanum* — were shipped from Mexico City to the Jardin des Plantes botanical garden in Paris.

Axolotls' presence in the mythologies of old is a strong one, as they have long been a vital part of the human societies who have lived on and around the Mexican lakes, such as at Xochimilco near Mexico City. They have been a part of their culinary tradition, and also an important part of their folk medicine.

Axolotls intrigued the ancient Aztecs because of their fascinating appearance and regenerative powers, and were believed to be a manifestation of the god Xolotl who was the ferryman of the dead to the underworld and the God of Fire.

There are two explanations for the name of these species. One connects it to Xolotl. In a story associated with the legend of the Five Suns, Xolotl (who has backward feet and the head of a dog) transforms into an axolotl. A second ex-

planation says the name comes from atl and xolotl, the words for 'water' and 'dog' in Nahuatl, the language of the Aztecs.

A folk remedy — a syrup made from axolotls, has been used as a common medicine to alleviate coughing for centuries. I also heard a rumor that their skin is a natural antibiotic.

To the Aztecs, the salamanders' regenerative power was similar to that of the Xochimilco lake system that sustained them.

It is almost impossible for humankind to see axolotls as they are — animals in the process of inevitable extinction.

Chapter four, page 522:

Trapped in nature



The lakes surrounding Mexico City, where axolotls originally live(d) in the darkness of the swamps, are losing their symbolic meaning as a connection between the past and future.

The water quality is poor, and only the most resilient species are able to survive. Axolotls, which are accustomed to being a top predator in their habitat, are ill-equipped to fight against a stronger force. With the growing pollution of their natural environment, they have begun to suffer greatly from the Anthropocene.

Therefore, the extinction of axolotls in their natural habitat, caused by human intervention, is ongoing, and the goal is not only to rescue the wild axolotl, but also the whole ecosystem of Xochimilco.

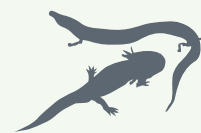
These canals of Xochimilco, along with artificial islands called chinampas, now serve as an attraction for numerous tourists and other city residents who en-

joy riding on colorful Trajineras, gondola-like boats that travel on the waters. The canal and chinampa system, as a vestige of the area's pre-Hispanic past, has made Xochimilco a World Heritage Site, but the threat of losing a major part of its natural environment due to an ecological catastrophe is a serious one.

It is almost impossible for humankind to see axolotls as they are — animals in the process of inevitable extinction.

Chapter five, page 1:

New ecologies – ecological parks, an oasis of the new dawns



Transfixed Gaze explores how we are able to perceive the parameters of new ecology, as ecological parks — an oasis of the new dawns — the space of the future, as the genetic reservoir of the planet.

What is clear is that nowadays we cannot walk separate paths in our efforts to conserve wild and domestic axolotls. Scientists and citizens who value the species for different reasons need to become better connected, and then work together towards a global understanding of axolotls, one that extends beyond specific interests and national borders.

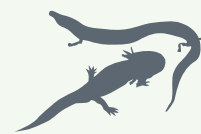
A global understanding of the value of axolotls would extend beyond specific interests and national borders. The power of biopolitics is reflected in the environment.

The axolotl is not only the most well-known animal of Xochimilco ecosystem — it is also a highly prized aquarium pet and animal model in laboratories. The long-term sustainability of domestic axolotl stocks rests on the conservation of its natural population in Mexico.

In 1863 six adult axolotls — *Ambystoma mexicanum* — were shipped from Mexico City to the Jardin des Plantes botanical garden in Paris.

Chapter six, page 7:

Transfixed Gaze



In the short story entitled ‘Axolotl’ by Julio Cortázar’s, the narrator is transfixed. He experiences his own metamorphosis into an axolotl: *“I stayed watching them for an hour and left, unable to think of anything else”*.

Transfixed Gaze intervenes into environments and discusses ecology in order to establish substantial changes in an ecosystem. It explores how to perceive the parameters of the ecological needs of other species in the times of dark ecology.

The project thus opens with the questions:

Who observes whom? Who is seen as a (water) monster and who is perceived as an optical illusion?

“Progress means: humanity emerges from its spellbound state no longer under the spell of progress as well, itself nature, by becoming aware of its own indigenusness to nature and by halting the mastery over nature through which nature continues its mastery.”

— **Theodor Adorno**



Piscis ludicrous / Transfixed Gaze (Lygophilia)

Video essay, 15' 30"

production: february 2018

Camera, editing, sound: Robertina Šebjanič | **The exhibition was prepared by:** Ida Hiršenfelder | **Text:** Robertina Šebjanič and Ida Hiršenfelder | **Voices:** Polona Torkar, Matija Drobne. **Sound design:** Rok Kovač | **Translation and proofreading (Slovenian):** Tamara Soban | **Proofreading (English):** Paul Steed | **Technical support:** Uroš Veber (Projekt Atol), Tomaž Kučer.

Production: *Lygophilia series*, 2017

Projekt Atol, Ministry of culture of Republic of Slovenia, Sektor, CIBAC-UAMX (Centro de Investigaciones Biológicas y Acuícolas de Cuernavaca Universidad Autónoma Metropolitana Unidad Xochimilco), Arte+Ciencia UNAM (The National Autonomous University of Mexico), Transitio_MX 07 festival, Centro Multimedia celebrado en Centro Nacional de las Artes (CENART).

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The Axolotl Immersed in its Spatiality

María Antonia González Valerio

Arte+Ciencia, Facultad de Filosofía y Letras. Universidad Nacional Autónoma de México

image: A+C Arte+Ciencia



The Axolotl Immersed in its Spatiality

Editor's Note

The installation *Neotenous Dark Dwellers - Lygophilia* is a flexible, modular artwork that, depending on the exhibition, can take different formats and include a variable list of items and objects.

After its premiere in Ljubljana in late August 2018, it travelled to Mexico City to be part of the *Spaces of Species* exhibition. The cabinets were replaced by a metallic box, fewer objects were exhibited—some being specific to the show.

The following text by María Antonia González Valerio is based on this version of the installation.



image: A+C Arte+Ciencia



image: A+C Arte+Ciencia



The Axolotl Immersed in its Spatiality

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Universidad Nacional Autónoma de México

Spaces of Species is the name of the exhibition that showed Robertina Šebjanič's *Lygophilia* series in Mexico City, at Centro de Cultura Digital, from November 2018

until February 2019.¹ The exhibition focused on the interaction between living entities and spaces stating that whatever something is, it cannot be self-determined. Traditionally, self-determination has been thought of as essence, form, substance, identity and even genetic code. Nothing, no entity, can be what it is without being determined. The question then arises: How does determination occur? And, then, a further question: How spaces are considered determinants? In the exhibition, we explored the determinations of entities through spaces as well as the different determinations of spaces and what brings them about.

What is an animal? What is an axolotl? In Šebjanič's work, the latter is shown as an animal on the verge of extinction; as a living being captive inside laboratories; as a blown glass art piece, displayed in a box resembling cabinets of curiosities; as a specimen preserved in formaldehyde; as an organism similar to *Proteus* salamander; and as something that, perhaps, remains hidden in Xochimilco's canals.

The axolotl exists within the space of its specific circumstances. Those circumstances have been produced by the many narratives, material conditions and historical

¹ • What Šebjanič presented is, in part, the result of a residency that she did in 2017 at Universidad Nacional Autónoma de México (UNAM) with the Arte+Ciencia group.



situations that have come to define it. The axolotl is the result of multiple epistemes and experiences that have configured it in to what it is today. Ever since science, in its Western form, came to the territory now called Mexico, the axolotl has been situated at the crossroads of art and science. The circumstances that have framed the axolotl have established the limits of what it can be — whether a cultural icon, a metaphor for “Mexicanity”, or a model organism. The axolotl exists in between biological epistemes and cultural symbols. In order to understand the animal it is first necessary to interpret and comprehend the set of circumstances that have defined it, in order to then be able to pose the questions: What is the axolotl? And, how has it become an entity with a territory that has shifted from Mexican lakes to international laboratories?

Let’s frame the animal in a narrative that throws light on the *Lygophilia* series. Let’s draw out the circumstances, out of which it can emerge.

I have never eaten axolotl.²

The space in which axolotls appear nowadays is very different to the context narrated by Bernardino de Sahagún in the 16th century who refers to them as being roasted and eaten by children during the festivity for the god Xiuhtecuhtli, a fire god whose celebration was performed each year.³

³ • Bernardino de Sahagún, *Historia general de las cosas de la Nueva España*, Book I, Chapter XIII.

Axolotls are dwellers of Mexico City, a city that has gone through immense changes over the last five centuries. The fate of the axolotl is chained to the city, being an endemic animal. The city and the animal are mutable entities that adapt to transformations. Nevertheless, the animal is not doomed to dwell in the city. It has

² • For this story I will preserve its name in Nahuatl, *axolotl*, instead of the Spanish *ajolote*. Although, it can also be referred to as *Ambystoma mexicanum* — its scientific name. It has had other names; it has been called a ridiculous tadpole, a small aquatic lizard, salamander larvae, *Siredon humboldtii* or even *Proteus mexicanus*. The many names it has borne are not necessarily due to the difficulties of its scientific classification, but to the strange case that taxonomy presents by itself. In our world (in the idea of our world) there are more names than things. Words and things are not equivalent and, therefore, the one cannot transmute into the other.



escaped from its margins. It has become an international citizen with no boundaries. Its ubiquity depends, on the one hand, on adapting to the aquarium and, on the other, on its losing its habitat. Actually, aquarium and axolotl are a conjoint becoming.⁴ But

the axolotl is doomed to live in water. The space of the axolotl is water. That is its territory. But what kind of water? Where does the water need to be? Water can be contained in an aquarium. And there the axolotl can live its whole life, imprisoned. Water can run slowly in canals. And there the axolotl can live its whole life hiding and emerging.⁵

If the axolotl escapes from its water habitat, it becomes a salamander: an amphibian that lives in water in its larval stage and lives on land as an adult. But this (possible) metamorphosis has given us a lot to think about as well as to probe into, in experimental terms, as will be seen later. In the meanwhile, the axolotl in Mexico City still lives in the canals of Xochimilco. It shares its territory with other animal and plant species as well as with other artifacts, *trajineras* (traditional small boats), *chinampas* (traditional agricultural system on water), motorboats and of course pollution.⁶

Xochimilco is not a paradise in the city. It is a fossil.

A reminiscence of ancient times when this city was an “aquapolis”.⁷

Not many years ago, there were still open river sand canals that served agriculture and commerce.

⁴ • “What distinguishes the case of the axolotl from the species mentioned above is that at the time when the axolotl came to Europe, the laboratory in zoology was itself only about to emerge as the privileged place of knowledge production. Axolotls were not introduced into an already existing laboratory infrastructure. Rather, the laboratory formed around them or with them in the course of the second half of the 19th century. Axolotls became entrenched into the specific conditions of 19th century zoology, which focused on comparison and description and only started to develop the sort of laboratory-based experimental systems typical for research organisms in the 20th century.” Reiss C., Olsson L., Hossfeld U. ‘The history of the oldest self-sustaining laboratory animal: 150 years of axolotl research’, *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution*, 2015 Jul, 324(5), p. 401.

⁶ • “Results indicated that potential distribution of the axolotl in Xochimilco is limited to 11 sites in six reduced, isolated, and scattered areas, located mostly in zones where traditional agriculture (chinampas) is the primary land use. Recent surveys found only a single organism in the whole study region, in one of the predicted sites, suggesting a critical situation for the long-term survival of the axolotl in the wild, and demanding urgent actions toward habitat and population restoration.” Contreras, V., E. Martínez-Meyer, E. Valiente, and L. Zambrano. “Recent Decline and Potential Distribution in the Last Remnant Area of the Microendemic Mexican Axolotl (*Ambystoma mexicanum*).” *Biological Conservation* 142, no. 12 (2009): 2881.

⁵ • Little is known about the preferences of axolotls in the wild when it comes to choosing their habitats. There is a case study where axolotls were reintroduced, as part of an experiment, in a canal of the Xochimilco as well as in an artificial canal in the Chapultepec Zoo: “Xochimilco, the last remaining area where the axolotl is naturally distributed, is a managed but highly polluted wetland composed of a series of muddy, smooth canals that connect lakes of different sizes, which influences macrophyte distribution. Vegetation may serve as refuge against predators such as crayfish, fish, snakes and birds. In addition, areas of vegetation attract important axolotl food sources, such as invertebrates and small fish. Therefore, our main hypothesis is that axolotls prefer microhabitats with vegetation coverage in different environments.” Ayala, C., A. G. Ramos, A. Merlo, and L. Zambrano. ‘Microhabitat Selection of Axolotls, *Ambystoma mexicanum*, in Artificial and Natural Aquatic Systems’, *Hydrobiologia* 828, no. 1 (2018), p. 12.

⁷ • Peter Krieger describes the cultural history of water in Mexico City, whereby its aquatic infrastructure was the basis of a rich lacustrine economy and a wide diversity. For Krieger, the projects to dry Mexico City were the result of political-technological forces, fueled by an obsession with dominating nature. His analysis shows how the modernisation of post-revolutionary Mexico City included implementing mega aquatic projects, in terms of stopping the floods, bringing drinking water to the population and draining open waterways by redirecting the rivers into tubes. By the mid-20th century, only half of the city’s population had a connection to drinking water pipes. But these projects meant that the vital complexity of the habitat was severely reduced. See Krieger, P. ‘*Acuápolis*. Temas y problemas’, en Krieger, P. (ed.), *Acuápolis*, México, UNAM, 2007.



In the 20th century, it was still possible to move around in small boats.⁸

Even though the drying up of the city's waterways began when the Spaniards came to Tenochtitlan, the project was not fully accomplished until

the 20th century⁹ — with its impulse for modernity. Of course Mexico City is not the only one that had problems with its aquiferous being.¹⁰ Tremendous floods happened in the city that kept it under water for weeks.¹¹ Later, drinking water and salubrity were an issue. Open rivers became sewage. Lakes dried out. The

five original lakes of Mexico's basin — that fused into one during rainy season — are almost dry. The tubed rivers no longer flow into the lakes or into the ocean.¹² Mexico City has a problem with its aquiferous being. And the axolotl has water as its territory. Not any kind of water, but the slow moving, muddy canal water inhabited by certain plants and of course without artificial menaces: tilapia

and carp.¹³ There are different projects to restore Xochimilco¹⁴, the natural

9 • In 1608, the first artificial drainage project, the “Tajo de Nochistongo”, was built. With it, the waters of the Cuautitlán River were expelled through a tunnel in the northern part of the basin. See González Reynoso, *loc. cit.*, p. 20.

11 • The most destructive floods were in the years 1629, 1634, 1674, 1732, 1747, 1819, 1851 and 1865.

13 • In the 1970s, a governmental program, apparently under the motif of “aqua culture”, introduced thousands of fishes into the country's waterways. In Xochimilco, they introduced the Chinese carp, a “devouring machine” that eats everything around plants, including roe and axolotl larvae. In the 1980s, tilapias were introduced from Africa. Although they don't eat axolotls, they reproduce profusely—they now make up 95% of the animal bio mass of the lake—and compete for resources with axolotls. See Zambrano, L., ‘La extinción del axolote en Xochimilco’, en Bartra, R., *Axolotlada*, México: INAH/FCE, 2011, p. 238.

8 • Since the 1940s, the rivers in the city started to be “tubed”; they were perceived as dirty and as a cause of floods. The sites of the rivers were then used to build highways and streets. The rivers go now under the never ending flow of cars. For a chronology of the disappearance of open rivers in Mexico City, see González Reynoso A. E. et al., *Rescate de ríos urbanos. Propuestas conceptuales y metodológicas para la restauración y rehabilitación de ríos*, México: UNAM, 2010, pp. 22-29.

10 • For example, in the 20th century, the city of Los Angeles plumbed the Los Angeles River at a great monetary cost and Tokyo dried the ditches of the Shitamchi neighborhood to build highways. See Krieger, *loc. cit.*, p. 33.

12 • By 2019, there is only one “living” river in Mexico City: río Magdalena. It is part plumbed and part open. But it is very polluted and stinky. Projects to recuperate it do not prosper, regardless of the administrative rulings of the city.

14 • Some projects relate Xochimilco to local farming and agriculture using the traditional chinampas. For the city, for any city, the question about food is central and fundamental. Where does food come from? There are few places inside Mexico City that still grow food. Xochimilco is one of them. There is a new interest in the place, therefore, because it can provide local food for restaurants. At the same time, this has meant that farmers are no longer growing local crops with local seeds because they do not meet the aesthetic standards set by world gastronomy and by the fancy and expensive restaurants. Therefore, they are growing crops from seeds—many of which are improved—that come from the Middle East, Europe or even farther. They are growing products that are *à la mode*, which are bought by companies like “Yolcan” for a low price and then resold to restaurants for a more expensive price. Instead of preserving the cultural and natural heritage of Xochimilco, as they claim to do, what companies like “Yolcan” are doing is quite the opposite; they are shifting it, in order to adapt to world-wide tendencies. Of course locals don't eat the fancy, strange things they grow and sell to these companies since they find them odd—kale and European lettuces, for example. People from Xochimilco still preserve a few local seeds to grow what they are used to eating, although some are being lost, like red maize. We learned that on a field trip to Xochimilco, while undertaking research activities for the Arte+Ciencia group for the N Festival held in the autumn of 2019.



15 • It is difficult to state that Xochimilco is a natural habitat, on account of the high degree of artificiality of its canals, chinampas and water. Anyhow, the debate between artificial and natural entities is not to be repeated here. The axolotl is, in any case, not a wild animal; it is a dweller of Mexico City and its lake.

habitat¹⁵ for the axolotl and the only remaining habitat in the city. Luis Zambrano is the head of the project that links the fate of Xochimilco to that of the axolotl; he claims that one is bound to the other: “Axolotl doesn’t ask for much; it could live tranquilly in the little space that has been left in the south

of Mexico City. To protect the axolotl is to protect Xochimilco...”¹⁶

16 • Zambrano, L., ‘La extinción del axolote en Xochimilco’, *op.cit.*, p. 239.

Axolotl cannot be described without references to Mexico City, its biological niche. Although the axolotl is not a biological entity. It is a historical one. But not as if evolutionary history was inside it, in its ontogeny, as the recapitulation theory

pretended.¹⁷ History is not understood as sequenced events that shape an organism or an entity. History is understood as a narrative that is narrated from a certain perspective or perspectives, producing forces that undo and redo the axolot

into something diffused. In that sense, the axolotl is the result of narrative forces crossing it and reshaping its meaning and its identity. What forces, and under what circumstances, have been narrating the idea of the axolotl? From ancient mythology¹⁸

to contemporary cultural and scientific discourses, the axolotl is the result of narrations and narrators. Who narrates?

The intertwining of art and science seems to be just right for the axolotl. It appears as

a character in tales and poems.¹⁹ It has been represented in drawings, murals,

paintings and comics. It is a protagonist in 19th century science debates about

evolution. And a co-creator of the notion of laboratories as places for experi-

mentation in zoology. Nowadays it is entangled in the investigation into regeneration

and stem cells. And it is a symbol of Mexican ideology.²⁰

And it continues to reshape itself, being traversed by forces

in the art and science scenes.

19 • The list of authors writing about axolotl is long and multicultural, for example, Aldous Huxley, Giorgio Agamben, Julio Cortázar, Octavio Paz, Salvador Elizondo, Juan José Arreola, José Emilio Pacheco and Verónica Volkow. All of whom are reunited in R. Bartra’s book *Axolotiada*.

18 • See Sahagún, *op. cit.*, book 7, where he narrates how the god Xólotl became an axolotl by hiding in the water, trying to escape death.

20 • Following the characterisations of 20th century thinkers — such as Samuel Ramos, Emilio Uranga and Octavio Paz — who presented descriptions of Mexican ideology and identity, the contemporary writer Roger Bartra portrays Mexican ideology as incapable of maturing — as is the case with the axolotl. See Bartra, R., *La jaula de la melancolía. Identidad y metamorfosis del mexicano*. México: Grijalbo, 2007.



The story of the axolotl changed abruptly once it arrived in Paris. But even before it went there, appearing in the debates of the 19th century science, it was already studied and framed in Mexico as a strange entity that deserved a different kind of characterisation. When Mexico was New Spain, the axolotl was studied in a medical context, for example, Francisco Hernández in the 16th century gave a description of it in his *Historia de los animales de la Nueva España*, claiming that the animal has a vulva very similar to the woman's one (later the legend would be that the axolotl has the capacity to get inside women's vaginas) and that it can be eaten fried, roasted or cooked with peppers.

I have never eaten axolotl, not even as a traditional remedy for tuberculosis. We can find an old recipe in José Antonio de Alzate description from 1790. His grandmother, Lugarda Pérez, got the recipe from the Indians: "the axolotls are peeled and the skins are cooked in a little water: when they are almost undone, the cooking is strained through a canvas: what is skin remains on the canvas, and, the water passes loaded with the glue or gelatin. To this one the necessary sugar is mixed, so that by virtue of a new cooking a syrup is produced, which is taken twice a day."²¹

²¹ • José Antonio de Alzate in *Gaceta de Literatura de México*, vol. 11, no. 56, 1709, quoted in Bartra, *Axolotiada*, p. 70.

The remedy is still sold in some markets in Mexico City. Although it is difficult to say if it follows the original recipe.

The current glory of the axolotl depends on the biological episteme. It is in the spotlight today because it is a model organism²², an animal that exists and is reproduced inside laboratories as an epistemic artifact.

It all began when it arrived in Paris. What a wonderful story to be told. The

²² • Stephen Jay Gould characterised it as a kind of *Drosophila* in the sense that it was a model organism for the study of recapitulation, which states, according to Ernst Haeckel, that ontogeny was a recapitulation of phylogeny. Instead of proving recapitulation, it has become a model for evolutionary developmental biology. S. Jay Gould: *Ontogeny and Phylogeny*, Cambridge and London: Harvard University Press, 1977, p. 319 ss.



axolotl in Paris, in that enlightened city.²³ But when it arrived it was already dead. Preserved in alcohol, it was sent as a specimen of a strange kind of salamander by Alexander von Humboldt to Georges Cuvier who dissected it and, following comparative anatomy rules, made drawings and fine descriptions

²³ • Julio Cortázar's famous short story about axolotl takes place in Paris. Although what he describes — an animal being in an aquarium observed by a visitor day after day — is an impossible existence for axolotl, because it is shy and doesn't show itself; if it is exhibited for the amusement of visitors it dies in a few days.

of the animal.²⁴

It all changed when live axolotls arrived in Paris, in 1864, and were given to the Société impériale zoologique d'acclimatation: “Enfin, messieurs, il y avait encore trente-trois Axolotls noirs et un Axolotl blanc.”²⁵

Along with the axolotls, some live cows and dogs were also sent as well as archeological pieces, minerals,

²⁵ • Étienne Ruz de Lavison, 'Note sur l'Euplocomus prelati et sur quelques envois de la cochinine et du Mexique', Bulletin de la Société impériale zoologique d'acclimatation 1, p. 178. Quoted by Reiss, C., *Die Geschichte des mexikanischen Axolotls als Labortier, 1864–1914: Verbreitungswege, Infrastrukturen, Forschungsschwerpunkte* [PhD thesis]. Friedrich-Schiller-Universität Jena, 2014.

plants and anything else that the French could collect.

During the French intervention in Mexico (1862-1867) that installed the Second Empire and Maximilian of Habsburg as Emperor between 1864 and 1867, the “Comission Scientifique du Mexique (CSM)” sent the axolotls to Paris. The CSM was formed by

appointment of Napoleon III in February 1864.²⁶

This is a case of colonialism and imperialism. The axolotl has belonged to the history of colonialism and imperialism from the moment it was taken by the commission and sent alive to Paris, where it was reproduced under experimental conditions. From then on, the axolotl would belong to the history of biology as a laboratory animal. Its territory would shift, from Mexican canals and lakes to laboratories, aquariums and, finally, to genetic stock

centers.²⁷

²⁷ • The principal bank is at the University of Kentucky, the Ambystoma Genetic Stock Center (AGSC), which maintains a breeding colony of Mexican axolotls (*Ambystoma mexicanum*) and distributes axolotl embryos, larvae and adults to laboratories and classrooms throughout the United States and abroad. <https://ambystoma.uky.edu/genetic-stock-center/> Accessed: May 30, 2019.

²⁴ • “For the axolotl, he concluded from the rather cartilaginous skeleton and the poorly developed reproductive organs, that it must be a larva of a yet unknown reptile species.” Cuvier quoted by Reiss C., Olsson L., Hossfeld U. ‘The history of the oldest self-sustaining laboratory animal: 150 years of axolotl research’, *loc. cit.*, p. 394. See also Cuvier G. *Recherches anatomiques sur les reptiles regardés encore comme douteux faites à l'occasion de l'axolotl rapporté par M. de Humboldt du Mexique*. Paris: l'imprimerie de L. Haussmann, 1807.

²⁶ • The commission gathered French scientists and sent them to Mexico to conduct research in the fields of anthropology, zoology, botany, mineralogy, paleontology, geology and medicine. There was also the “Commission Scientifique, Littéraire et Artistique du Mexique” that gathered French and Mexican scientists, founded also in 1864, by the French general Bazaine. See Ramírez R. y I. Ledesma, ‘La Commission Scientifique du Mexique: una aventura colonialista trunca’, *Relaciones* 134, primavera 2013, pp. 303-347. Before the CSM came to Mexico, work had been undertaken by other French expeditioners in Mexico, like Lucien Biart, who offered the artifacts he had collected to the Louvre Museum and the organic specimens to the museum of natural history. See Dunbar, G.S., ‘The Compass Follows the Flag: The French Scientific Mission to Mexico, 1864-186’, *Annals of the Association of American Geographers*, 78(2), 1988, pp. 229-240. One of the main tasks of the CSM was to produce accurate maps of Mexican territory, along with collecting archeological and biological materials.



28 • See Duméril, A., 'Observations sur la reproduction, dans la ménagerie des reptiles du Muséum d'histoire naturelle, des axolotls, batraciens urodèles à branchies extérieures du Mexique, sur leur développement et sur leurs métamorphoses'. *Nouv Arch Mus Hist Nat* 2:265–292. <https://gallica.bnf.fr/ark:/12148/bpt6k441399g.texteImage> Accessed: May 30, 2019.

30 • "Neoteny is defined as the retention of conspicuously juvenile characteristics into adulthood, and it is most evident in the axolotl's prominent gills and fins, which most other amphibians lose in their adult stage. Adapted to live their whole lives in water, they also do not develop eyelids and are fully capable of reproducing in their 'larval' state." <http://www.devbio.biology.gatech.edu/vertebrate-development/amphibians/axolotls-as-models-in-neoteny-and-secondary-differentiation/> Accessed: May 30, 2019

Of the 34 axolotls that arrived alive in Paris, the Jardin Zoologique d'Acclimatation du bois du Bologne²⁸ gave six (five males and one female) to the Muséum d'Histoire naturelle in Paris where the zoologist August Duméril worked. Duméril then experimented with axolotls, although he initially thought, following Cuvier, that they were larvae. Subsequently, he witnessed the reproduction of the animals and then their metamorphosis into salamanders. The story that he tells about the mutilations performed on living axolotls is disturbing: he cuts the gills to see if the metamorphosis could be forced like that, but the gills regenerate, so he cut them again and again. No metamorphosis happened though.²⁹ The main biological problem, the main characteristic and identity, was that the metamorphosis of axolotl into salamander did not occur. Instead, it is a case of neoteny.³⁰

29 • The experiments can be read fully in Duméril, *loc. cit*

Here is a resume of the most important achievements of the *séjour* of axolotls at the Muséum with Duméril, which would prominently insert them into the biological episteme up until today:

"[...] en 1864, la ménagerie du Muséum reçut six Axolotls qui lui furent donnés par le Jardin d'acclimatation. Ces Axolotls ne tardèrent pas à se reproduire. Enfin, en 1866, un de ces jeunes Axolotls, éclos en 1865, attira l'attention par son aspect qui le rendait tout à fait différent de ses congénères. Les houppes branchiales avaient presque complètement disparu ; il en dos était de même des crêtes membraneuses du et de la queue ; la forme de la tête était un peu modifiée ; enfin le corps présentait de nombreuses petites taches irrégulières d'un blanc jaunâtre. D'autres Axolotls ne tardèrent pas à subir les



mêmes transformations. M. A. Duméril institua alors une série d'expériences dans le but d'obtenir artificiellement ces transformations.

Il fit l'ablation des branchies sur un certain nombre d'Axolotls, ayant soin de réséquer ces parties à mesure qu'elles repoussaient. Sur neuf batraciens ainsi traités, deux se métamorphosèrent complètement dans l'espace de quatre ou cinq mois, un troisième au bout de dix mois. On remarqua que la disposition des dents vomériennes était complètement changée chez l'Axolotl transformé. Il s'était passé un phénomène analogue à celui qui avait été observé déjà chez les Tritons et chez l'Euprocte. Mais on reconnut alors que par la disposition de ces dents, et par tous les autres caractères, on était en présence d'un

véritable Amblystome.”³¹

³¹ • Brocchi, P. *Mission scientifique au Mexique et dans l'Amérique centrale. Recherches zoologiques*. Troisième partie, Étude des batraciens de l'Amérique centrale. Partie 3, Section 2, Paris, Impr. nationale, 1882, p. 105.
<https://gallica.bnf.fr/ark:/12148/bpt6k97715919/f42.image> Accessed: May 30, 2019.

³³ • Today neoteny is explained according to thyroid activity.

The German naturalist August Weissman continued the experiments to see if the axolotl transformed and under what conditions, without succeed. So he asked the researcher Marie von Chauvin, who had excellent skills breeding animals, for help and by lowering the water level in which the axolotls were kept she succeeded in achieving the transformation of the five axolotls that she worked with.³² These experiments were situated in the middle of the debate between Darwinism and anti-Darwinism in the 19th century.³³ Chauvin's experiments are central to our understanding of the production of the artificial natural space of the aquarium as a research tool, where the reproduction and development of amphibians could be manipulated. And, furthermore, it sets the frame for asking questions about the relationship between organism and environment.³⁴

³⁴ • Reiss, *loc. cit.*, p. 163.

³² • See Reiss C., Olsson L., Hossfeld U. 'The history of the oldest self-sustaining laboratory animal: 150 years of axolotl research', *loc. cit.*, p. 30. For an extended explanation of the experiments, the conclusions and the interpretations see Reiss, *Die Geschichte des mexikanischen Axolotls als Labortier...*, *op. cit.*, chapter 'Marie von Chauvins. Amphibienexperimente und das Aquarium als Instrument der experimentellen Forschung', p. 150 ss.



José María Velasco, famous Mexican painter, whose depictions of axolotls are incredible, was also a naturalist and was part of the debate, discussing Duméril and Weissman claims about metamorphosis. His studies and conclusions in comparative anatomy and evolutionary theory were based on the images and illustrations that he produced, which were of tremendous use to him in probing his claims about the nature of the axolotl and other species—like the one he discovered and that is named

after him: *Ambystoma velasci*.³⁵

Apparently, all of the axolotls that had been distributed in Europe up until

1914 came from that first Parisian batch.³⁶ Nowadays, there is a problem with axolotl biodiversity and gene pool. Since axolotl is

“the oldest self-sustaining laboratory animal population, celebrating its

³⁷ • *Ibid.*, p. 393. 150th anniversary in 2014”³⁷, the inbreeding is high. Therefore, sci-

entists have called for the renewal of its gene pool and biodiversity by keeping its only environment in good condition. The restoration of Xochimilco as axolotl territory could be a one way of ensuring that the model organism continues to function for experiments on regeneration research and evolutionary developmental biology and provide enough genetic

diversity.³⁸ The stocks at the University of

Kentucky could then be fed with new bio material. And that is of great significance for the biological episteme, which is the contemporary axolotl’s space of growth and development.

The relation between organism and environment — a topic that is fundamen-

³⁵ • For a discussion of Velasco’s naturalist approach to the study of the axolotl and his contributions to the debate, see Omar Olivares Sandoval, ‘The Axolotl Scientific Images of José María Velasco: Nineteenth Century Visual Strategies and Evolution’, 2019, unpublished.

³⁸ • “With a strategy in place to protect and expand axolotl populations in Xochimilco, there is hope that wild genetic material will be available for import into the AGSC to increase genetic diversity. Although most axolotls in the world trace their ancestry to the AGSC, it is also possible that axolotls from domestic axolotl collections around the world harbor significant genetic variation that is not present in the AGSC population.” Randal Voss, S., et al ‘A Tale of Two Axolotls’, *BioScience*, Volume 65, Issue 12, 01 December 2015, p. 1137.

³⁶ • For Christian Reiss, the reconstruction of the story stops in 1914. This is because the number of publications in the USA was augmented after the First World War, making it more complicated to trace back the cases to the Parisian animals. Even if many axolotls in the American research field could be traced back to the Parisian progenitors, 94 animals were also imported from Mexico. Up until 1914, most of the work was done in Europe and it is certain that there were no imports of new animals from Mexico. See Reiss, *Die Geschichte des mexikanischen Axolotls als Labortier...*, op. cit., chapter ‘Marie von Chauvins. Amphibienexperimente und das Aquarium als Instrument der experimentellen Forschung’, p. 10.

Regarding tracing back the history of the distribution of axolotls: “it is therefore possible to trace a direct transmission of axolotls from Duméril in Paris in 1864 via von Kölliker in Würzburg in 1867 to Weismann in Freiburg in 1872 and then with Valentin Haecker to Stuttgart in 1900 and to Halle in 1909.” Reiss C., Olsson L., Hossfeld U. ‘The history of the oldest self-sustaining laboratory animal: 150 years of axolotl research’, p. 399.



tal for critics of the gene centered paradigm of molecular biology — has proven to be

of particular importance for the axolotl.³⁹

Its metamorphosis is related to ponds, canals and aquariums. Its neoteny is related to the territory of Mexico, its lakes and canals. Today, though, its niche is found mainly in laboratories.

Hence, the axolotl's space has been determined by the Mexican territory that is

its original biological niche; by the transformations that the city has encountered in ceasing to be an aquapolis; by laboratories and aquariums since the 19th century; by the biological episteme and the debates, discourses and research fields; and by cultural symbols and tales of Mexican identity.

Robertina Šebjanič's artwork *Lygophilia* series accomplishes the task of representing the different layers and conditions of these multiple circumstances that determine the becomings of the species axolotl, or *Ambystoma mexicanum*, in its spaces.

What is an axolotl?

I take the blown glass figure that was part of Šebjanič's installation in my hand and I wonder... What is the story behind this animal? What has happened to this creature?

What have been its voyages?

³⁹ • “The facultative paedomorphosis [the appearance of ancestral juvenile traits in adult descendants] of several *Ambystoma* species has been known for more than a century—ever since Duméril, having reported (with some surprise) the sexual maturation of axolotls, compounded his astonishment by observing the transformation of other specimens. In most species with facultative paedomorphosis, the ease and frequency of transformation can be correlated with geographic, climatic, and ecological gradients [...] The famous Xochimilco population of *A. mexicanum* is notoriously difficult to transform (it is the source of laboratory stocks for most experimental work on axolotls). In nature, it inhabits deep, permanent, clear water. Nearby populations living in shallow, temporary, and turbid ponds are rarely paedomorphic and can be easily induced to transform. [...] A salamander will not crowd itself out of a good pond when life is so difficult outside it—especially when the pond may persist as a favorable environment for several thousand years.” S. Jay Gould: *Ontogeny and Phylogeny*, p. 319-324.



Isolated in the compartments in the metal and glass cage, the dead specimens preserved in formaldehyde look at us... There will neither be a metamorphosis, nor will I be transformed into an axolotl and be able to look from out of its container — through

its eyes...⁴⁰

I've never eaten axolotl.

The space in which axolotls appear nowadays is very different from...

—

María Antonia González Valerio

Arte+Ciencia, Facultad de Filosofía y Letras

Universidad Nacional Autónoma de México

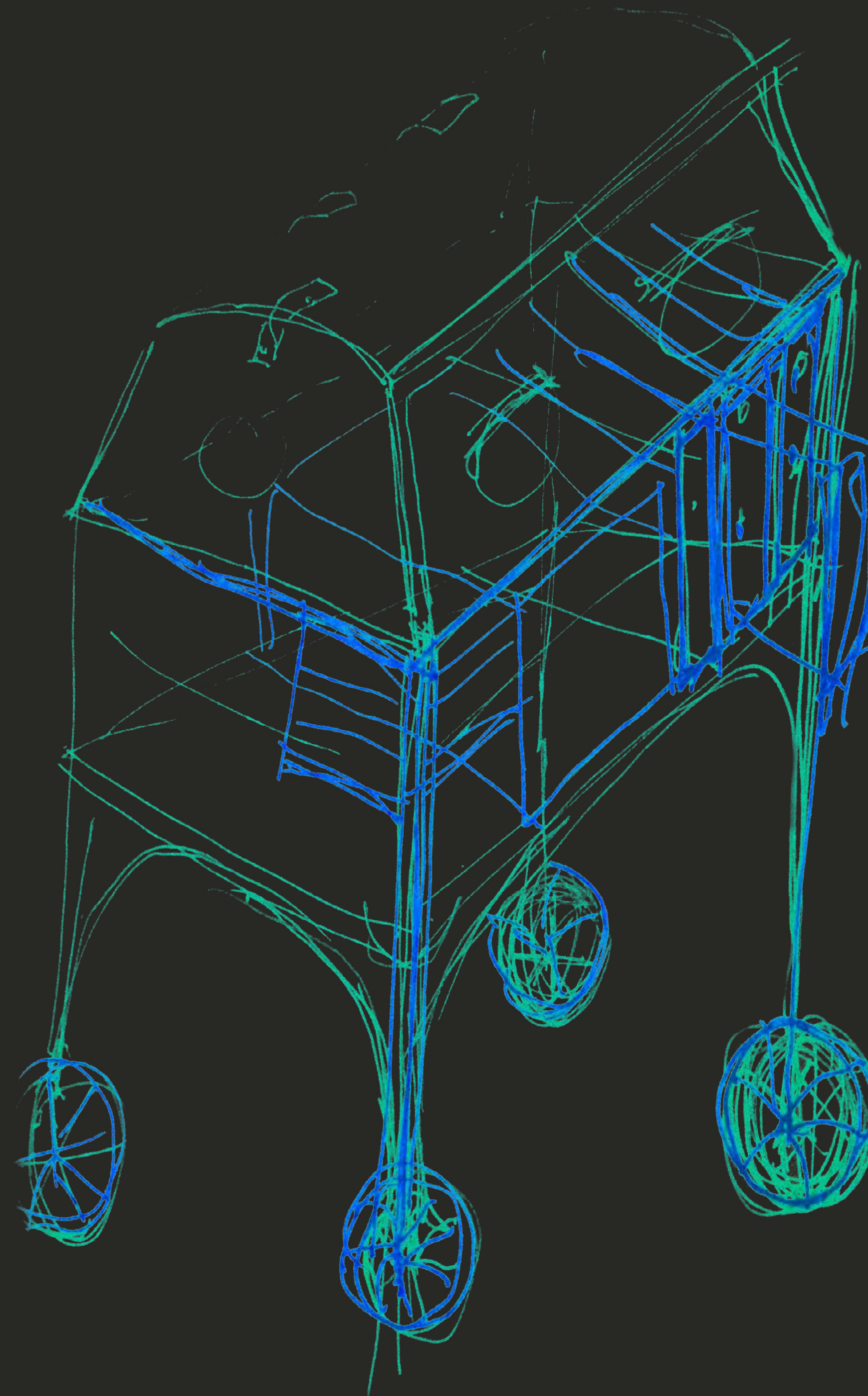
English editing by Ana Čavić





Dissection of a Human Gaze

Annick Bureau



Sketch from Robertina
Šebjanič's note book



Neotenous Dark Dwellers - *Lygophilia*

Dissection of a Human Gaze

Annick Bureau

In the darkness of the gallery space bathed with, at first, an almost imperceptible sound of water dropping, stand two mobile Plexiglas and stainless steel cabinets. They hold an array of objects and documents, revealing or concealing them depending on where we stand.

Even before we come closer, they trigger unconscious references in our mind. They evoke the natural history museum displays as well as the scientific lab glove boxes or the maternity incubators. But, by their very design and aesthetics, they also, explicitly, inscribe themselves into the artistic realm and the art *dispositif* while acting as exhibition display in their own right. They are both the artwork and its exhibition.

Upon closer observation, obviously each cabinet is dedicated to one specific animal. It is also clear that they share some common grounds. However, there is no information provided about what we are looking at. Unless you are Mexican, in the case of the axolotl, and Slovene, in the case of the proteus, you have very little chance to spontaneously name them.



Unlike in a natural history museum, or even in an art show, the exhibited objects do not come with labels that would explain what they are. They do not really provide either an explicit knowledge about the two amphibians. They act as indices, keys to something else: the symbols of the different human gazes toward the animals.

With *Neotenous Dark Dwellers - Lygophilia*, Robertina Šebjanič dissects the way we consider things, that is to say our scientific, philosophical, cultural and ethical ideas, conceptions and positions. It is as much about us as about the animals themselves.

There are no axolotls nor proteus in the installation, neither alive nor dead. They have disappeared. They exist implicitly through the expression of our various appropriations, like the shadows cast on the floor by the light on the blown glass sculptures.

There is the animal of scientific knowledge and laboratory experiments with a series of illustrations from different periods ranging from its 19th century description to its 21st century manipulation. There is the cultural animal that populates stories and tales, merging the animals and humans, from the famous Julio Cortázar short story, based on the axolotls from the Jardin des Plantes in Paris to science-fiction and fantasy, spanning high and popular cultures. There is the souvenir animal with olm-shaped chocolates. There is the national animal, and much more. Šebjanič's detailed examination, through the abundance and multiplicity of human discourses regarding these animals, paradoxically allows them to regain some importance, a place where they elusively exist apart from us, by and for themselves.



Neotenous Dark Dwellers - Lygophilia borrows from elements of the 19th century.

There are the delicate blown glass sculptures that call to mind the famous glass makers Leopold Blaschka and his son Rudolf who in the 19th century created glass marine invertebrates that they sold to universities, museums as well as rich collectors. Whereas the Blaschka were trying to produce representations of the animals as true as possible, Šebjanič's sculptures do not look for accurate likeness. Although respectful of their shapes and number of their fingers for instance, they are slightly oversized and without any colour. They do not belong to the realm of educational or scientific artefacts but to art.



Aurelia aurita, from the Blaschka glass collection of the Natural History Museum Vienna

image © Annick Bureau

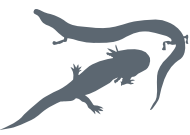


image © Miha Godec

There is the phenakistiscope, a pre-cinema lovely device that we enjoy playing with and even collecting. But the image that Šebjanič has chosen to show is the grafting experiment of Georg Schneider on axolotls. Pure horror.



Strip created for the device by the artist based on a drawing by G. Schneider



And there are of course, the reproductions of the 19th century illustrations depicting the animals. By stripping them from their classificatory or original functions, by bringing them into the aesthetics field, they shine a light on the splits but also the echoes regarding our (Western) conceptions toward nature throughout the last two centuries.

Neotenous Dark Dwellers - Lygophilia is not strictly speaking a *cabinet de curiosités* which implies an heterogenous collection of strange and remarkable objects and creatures. In the installation, all the objects are coherently related to the two same amphibians. If it were to be considered a *cabinet de curiosités*, then it is one about humans, in the variety, diversity and sometimes strangeness of their approaches toward the animals, nature and the Living in general.

With its Plexiglas shelves, its many glass pieces, and the cold brightness of the stainless steel, *Neotenous Dark Dwellers - Lygophilia* deploys an aesthetics of the transparency, clean and elegant, in a sharp contrast with the darkness in which axolotls and proteus live but also the darkness of what we impose on them (as lab animals) and the darkness of their current fate (extinction).



Playing with a crossed mirrored approach where each element, each story, each animal is echoing, reflecting but also diffracting and counteracting the other, Šebjanič invites us to a journey into our cultural gaze and its evolution. *Neotenous Dark Dwellers - Lygophilia* offers the visitors to gain a more profound view of interspecies cohabitation in the contemporary world for a common future.

However with this artwork, she is adding another gaze on the animals, which is also a *human gaze*. The artwork is so to speak looping upon itself: we cannot escape from our point of view, the way we look at the others is always from *our* perspective.

The animals have no idea that now we care about them.

—

Annick Bureau





Objects & Documents

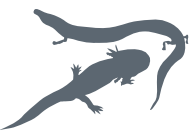
included in the installation *Neotenus Dark Dwellers - Lygophilia*

as exhibited for its premiere at the gallery OSMO/ZA, Ljubljana | 31 August-2 September 2018

image: Miha Godec

AXOLOTL CABINET





Alexander von Humboldt

Beobachtungen aus der Zoologie und Vergleichenden Anatomie gesammelt auf einer Reise nach den Tropen-Ländern des neuen Kontinents, in den Jahren 1799, 1800, 1801, 1802, 1803 und 1804 von Al. von Humboldt und A. Bonpland. Bearbeitet und herausgegeben von Ersterem. Tübingen, bey F. G. Cotta Paris, bey Levrault, Schoell und Compagnie 1806. Radierung/Aquatinta.

[Observations from Zoology and Comparative Anatomy collected on a journey to the tropics of the New Continent, in the years 1799, 1800, 1801, 1802, 1803 and 1804 by Al. Von Humboldt and A. Bonpland. Edited and published by Tübingen, by F. G. Cotta Paris, by Levrault, Schoell, and Compagnie 1806. Etching / aquatint].

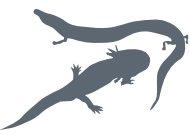


Georges Cuvier

The animal kingdom arranged in conformity with its organization. With supplementary additions to each order by Edward Griffith. Vol. 9 Reptilia, London, G. B. Whittaker, 1827.

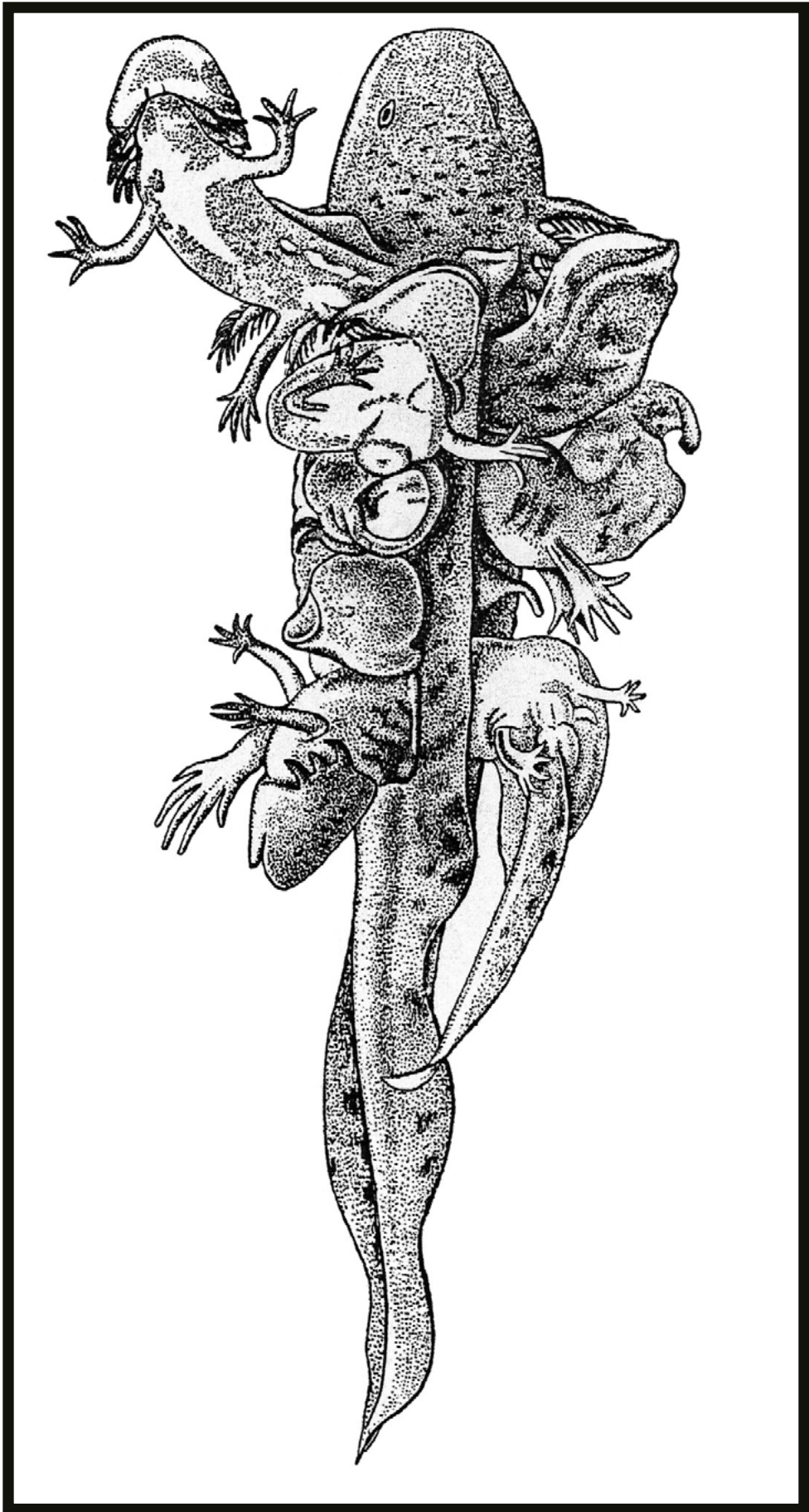
<https://archive.org/details/animalkingdomarr09cuv/page/n67>





Georg Schneider

Über Tierpfropfungen (About grafting animals), Urania 10 (2), pp. 41-44, 1947.



Transplantation

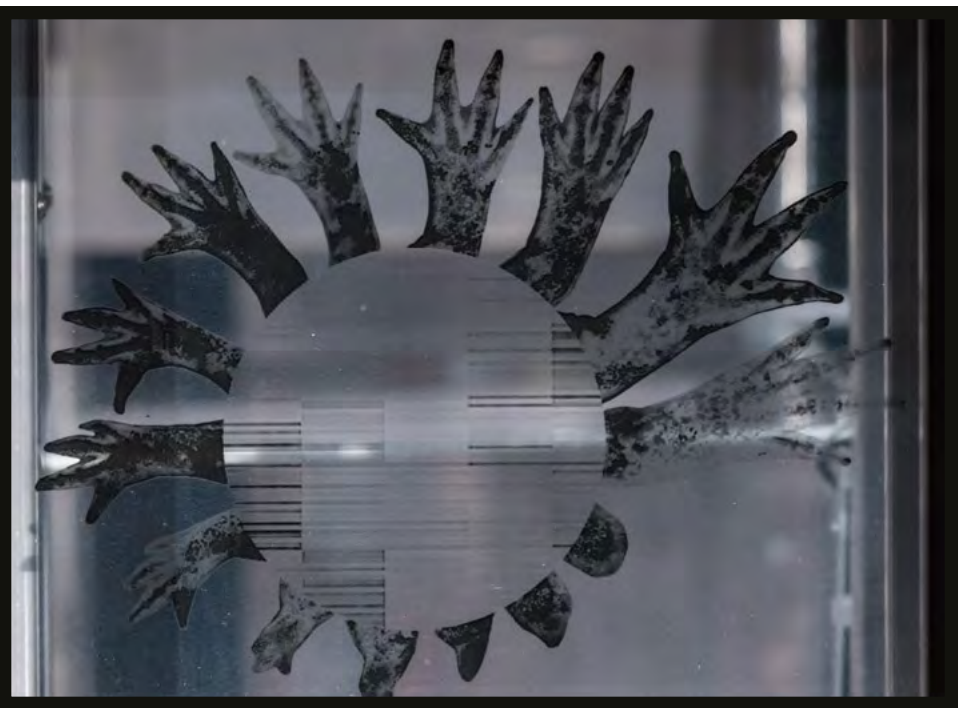
Image showing the transplantation of an axolotl head onto another axolotl from the article ‘Transplantation of Axolotl Heads’ by N.J. de Both of Hubrecht Laboratory, Universiteitscentrum “De Uithof”, Utrecht, Netherlands, published in *Science*, 25 Oct. 1968, Vol. 162, Issue 3852, pp. 460-461, DOI: 10.1126/



Regeneration

The image, from 2012, shows the steps of axolotl limb regeneration, from The Monaghan Lab, Northeastern University, Boston, Massachusetts, USA.

https://web.northeastern.edu/monaghanlab/?page_id=58



BLOWN GLASS SCULPTURES



Five blown glass sculptures, one of which is a "double" animal evocating its grafting capacities and the manipulations it undergoes.



image © Miha Godec

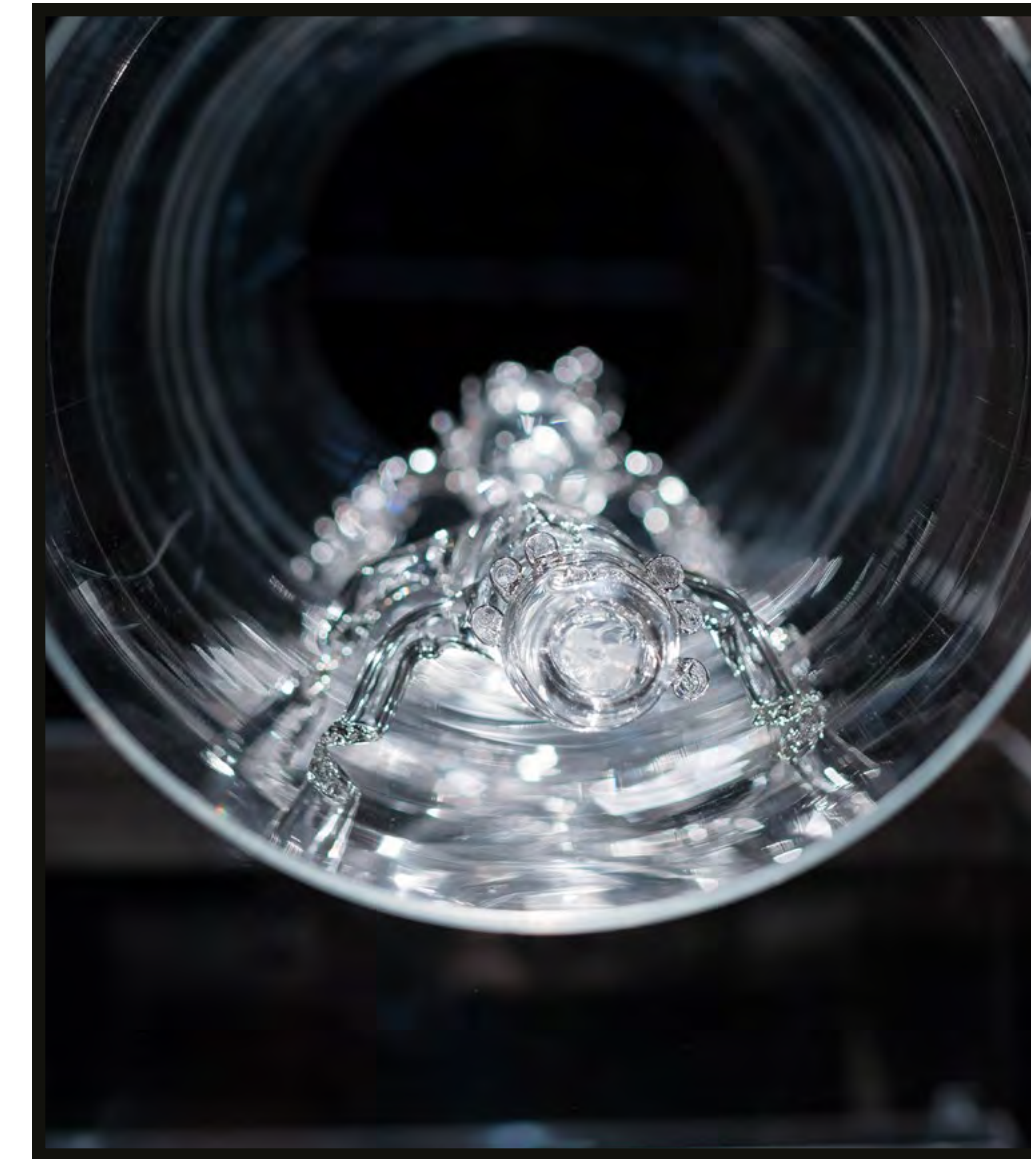


image © Miha Godec



image © Miha Godec



image © Miha Godec



Xolotl, as originally published in the *Codex Fejervary-Mayer*, 15th century, author unknown (Public domain).

Original image in colour. Reproduced in black and white on transparency for the installation.



image © Miha Godec

FICTIONAL STORIES IN BOOKS AND MAGAZINES



Julio Cortázar

The short story 'Axolotl' by Julio Cortázar was published in 1956 in *Final del juego* (in Spanish).

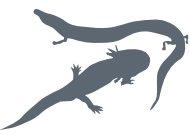
The exhibited book is the 2018 edition published by Debolsillo.



Robert Abernathy

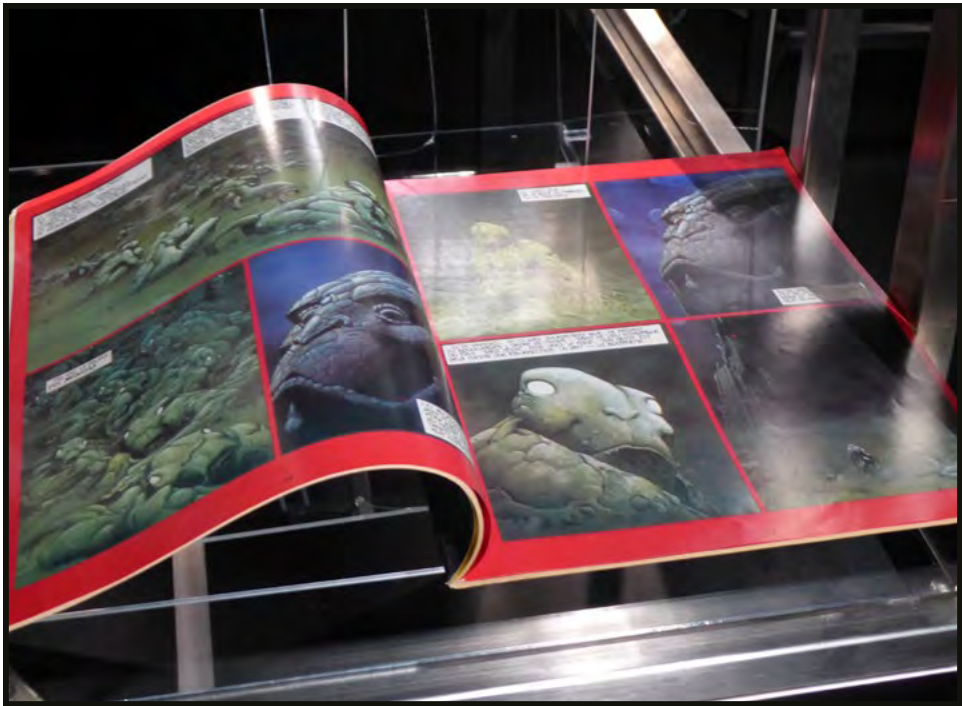
The sci-fi short story 'Axolotl' by Robert Abernathy was published in *F&SF* (*The Magazine of Fantasy & Science Fiction*) in the March 1954 issue (in English).





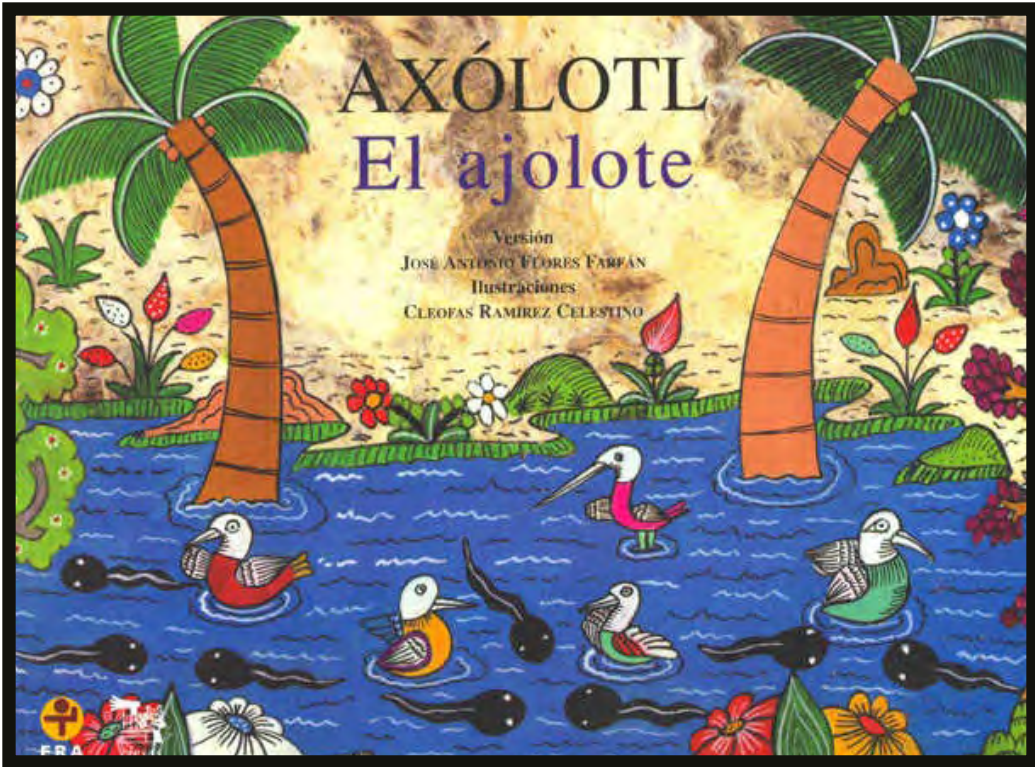
Comics Magazine

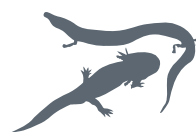
The sci-fi comics story ‘Axolotls’ by Caza was published in *Metal Hurlant* n°78, 1982 (in French).



Children’s book

Axolotl. El ajolote, by José Antonio Flores Farfán (based on the *Historia general de las cosas de Nueva España* de Fray Bernardino de Sahagún), illustrations by Cleofas Ramírez Celestino, Ediciones ERA, 2006 (in Spanish) is one of many children’s stories taking the axolotl as a character.





Cheap plastic axolotl pendant.



image © Annick Bureau



From left to right

→ **Moisturising cream:** for hydration and regeneration of skin

→ Three different kinds of **dietary supplement syrup in bottles:** cough medicine and medicine for improving the immune system

→ **Moisturising cream:** for hydration and regeneration of skin

→ **Lollipops:** cough medicine



image © Miha Godec

All products exhibited in the installation were bought by the artist at the *Mercado de Sonora* (Sonora Market) in Mexico City, Mexico. Among its many products, this market is known for selling herbal medicine as well as magic and occult related items.

PHENAKISTISCOPE



Using a drawing of an experimental parabiosis (a technique in which two living organisms are joined together surgically and develop single, shared physiological systems) by Georg Schneider as a starting point for a collage and combining it with a copy of a 19th century moving image display, an animation of the grafting of axolotls using their regeneration property is shown by rotating the inner cylinder of the device.



image © Annick Bureau

SALAMANDER ON A GLASS PLATE AND THREE TEST TUBES WITH A SALAMANDER IN ONE OF THEM



The two salamanders were bought by the artist in Houston, Texas, USA, in a shop of oddities called The Wilde Collection.

Both are *Ambystoma tigrinum* ("tiger salamander"), a species related to axolotls that are *Ambystoma mexicanum*.

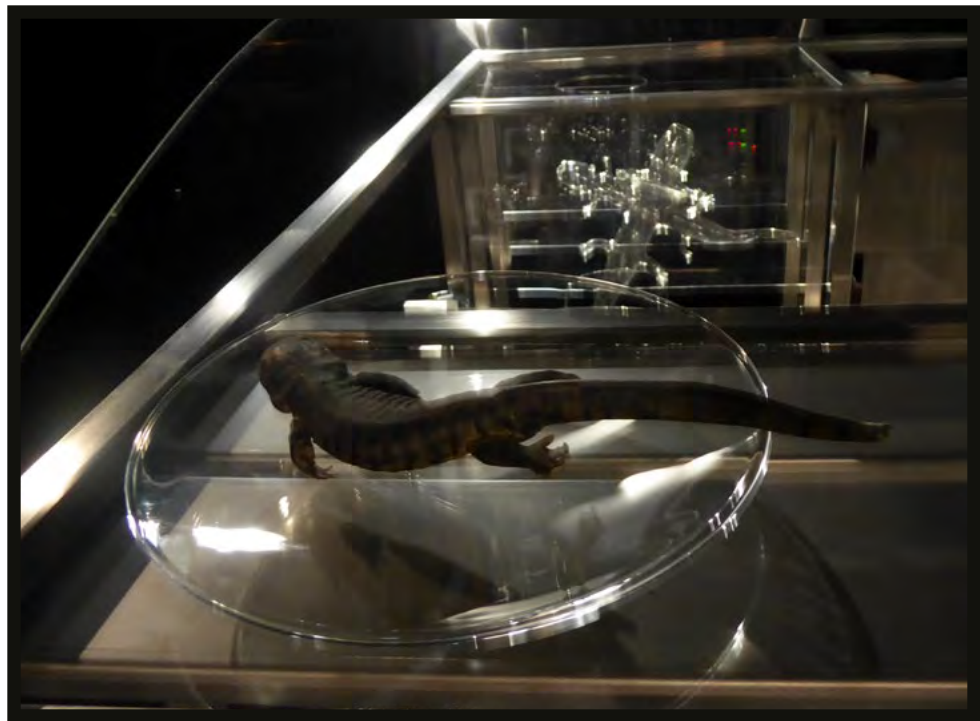


image © Annick Bureaud

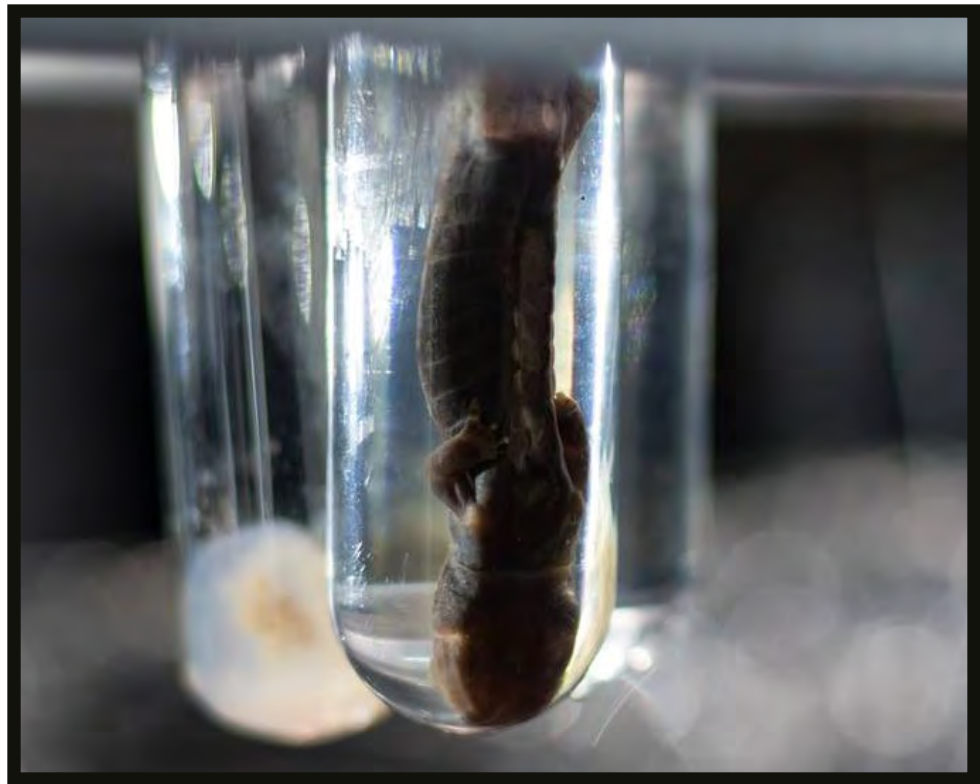
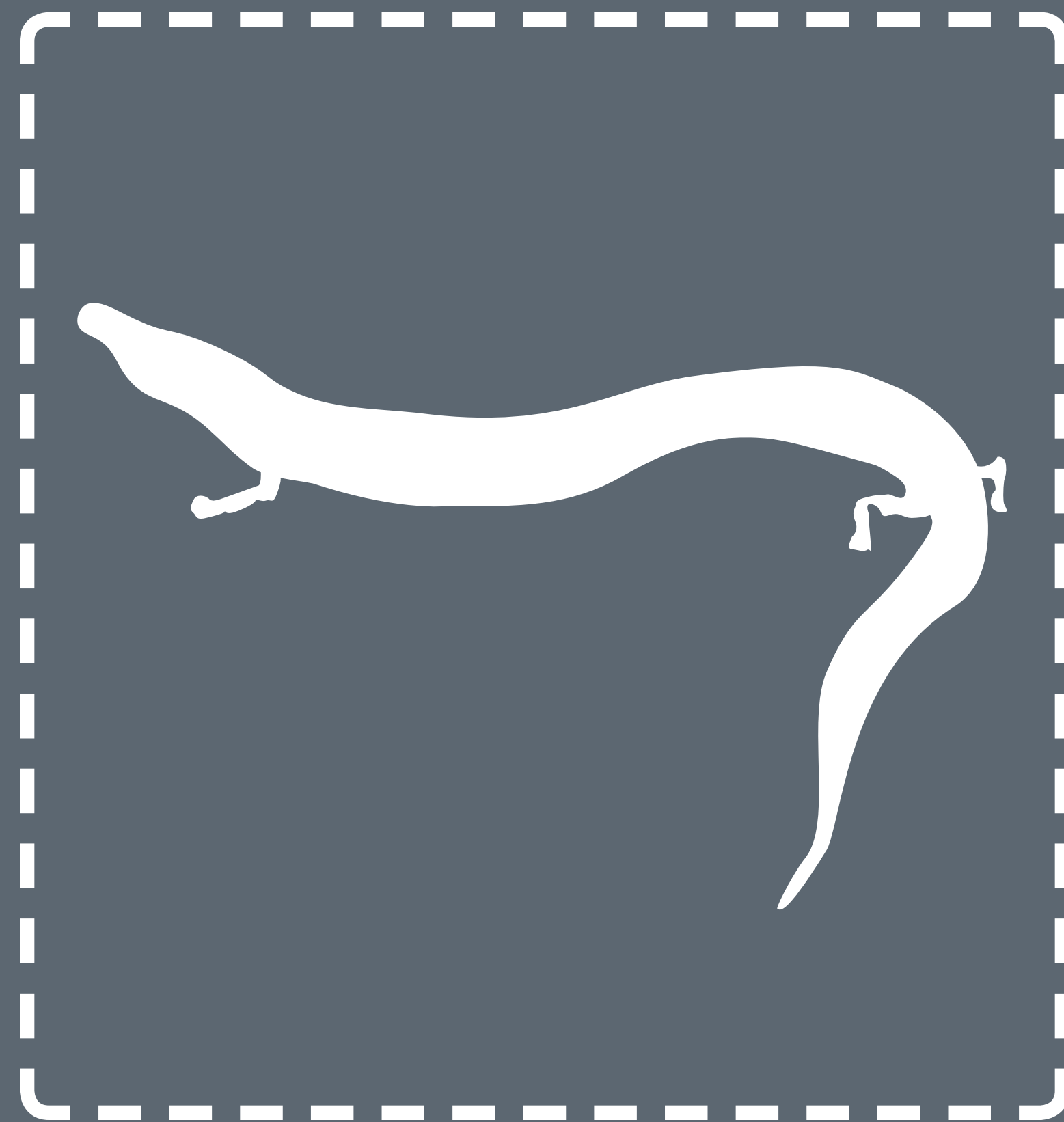
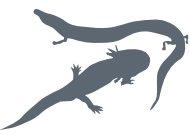


image © Miha Godec

PROTEUS CABINET





Joseph Nicolaus Laurenti was the first to publish a description of the animal in 1768 in *Specimen medicum, exhibens synopsis reptilium emendatam cum experimentis circa venena et antidota reptilium austriacorum*, Vienna, Joan Thomae.

<https://archive.org/details/specimenmedicume-00laur/page/n4>

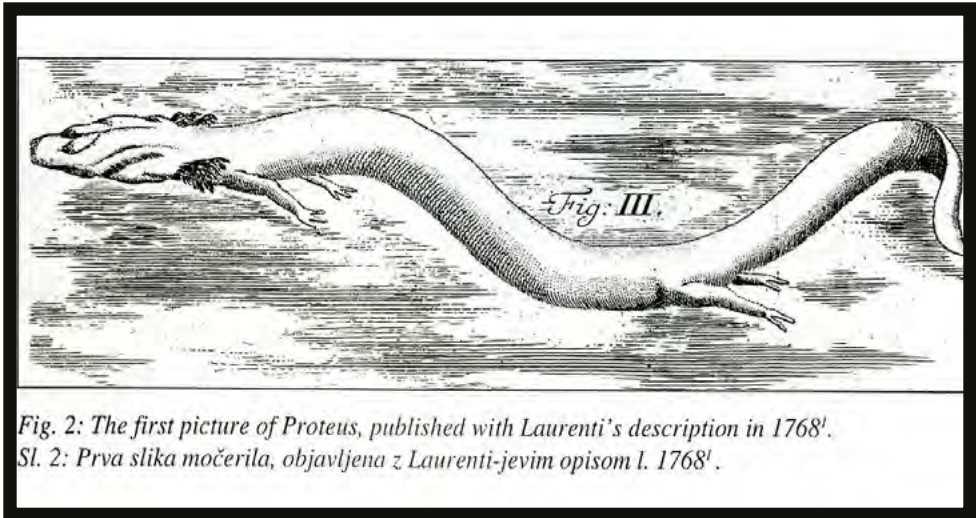
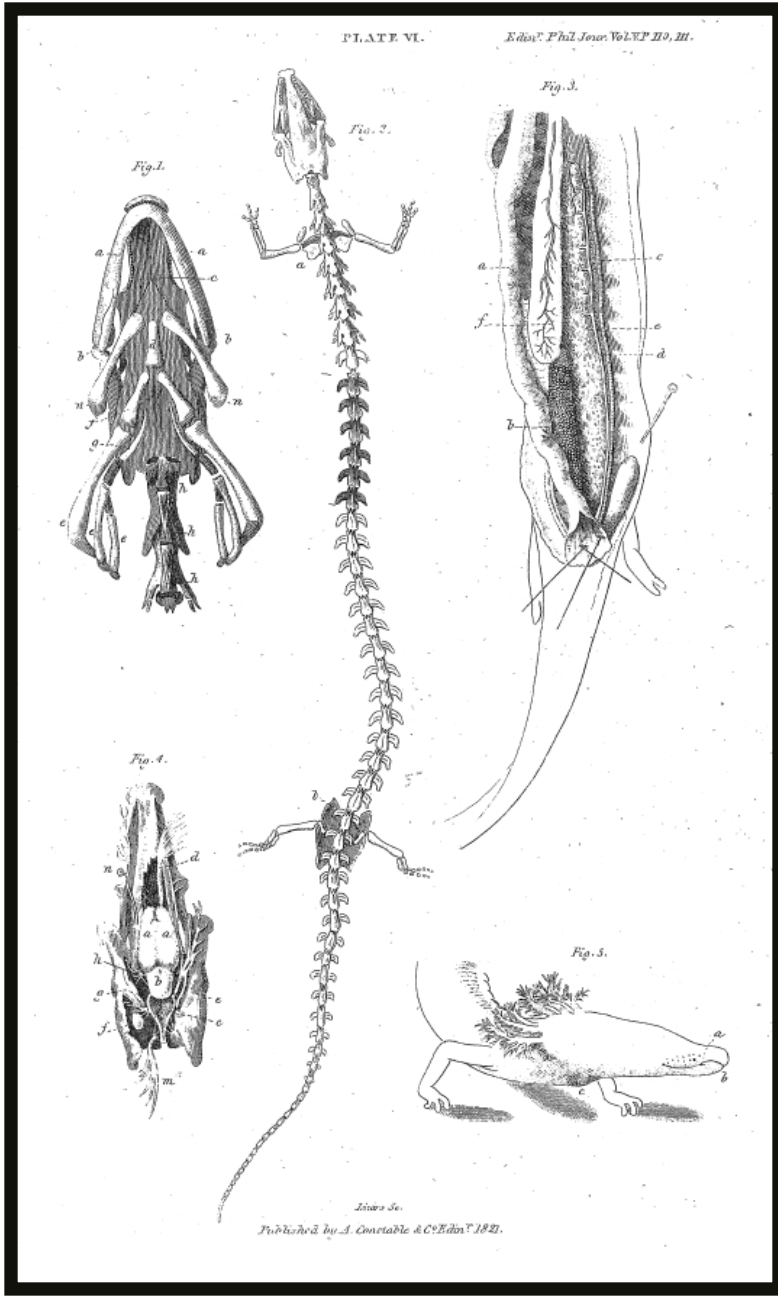
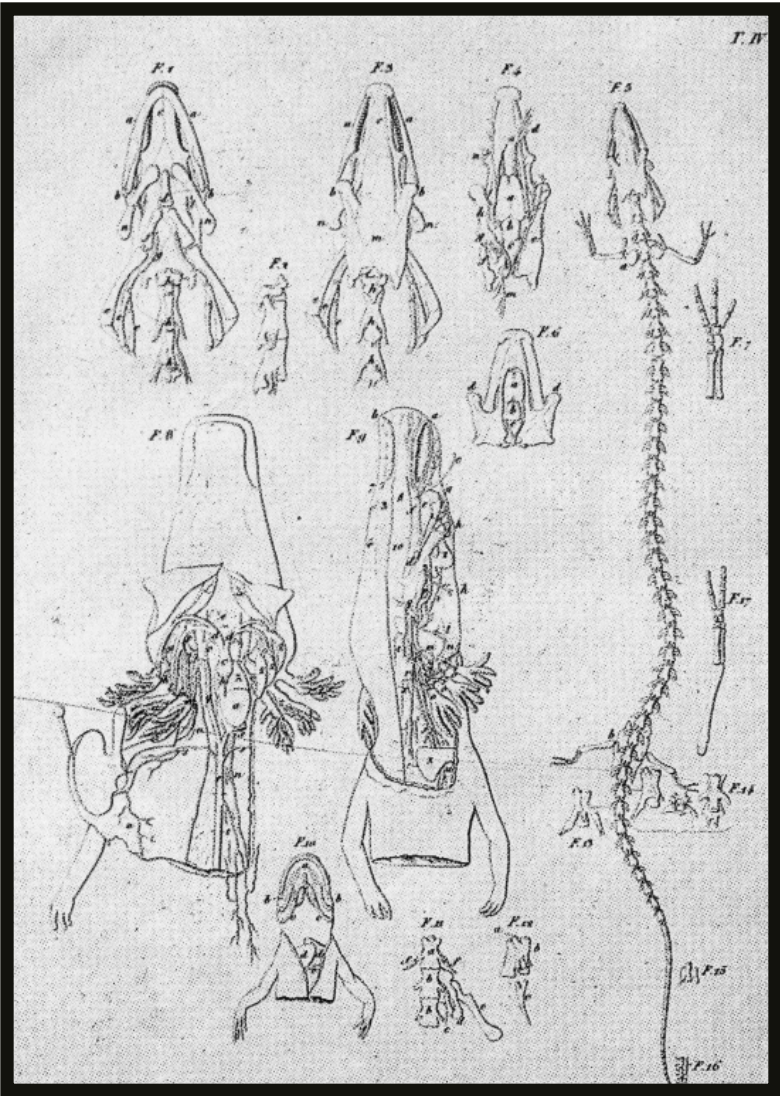
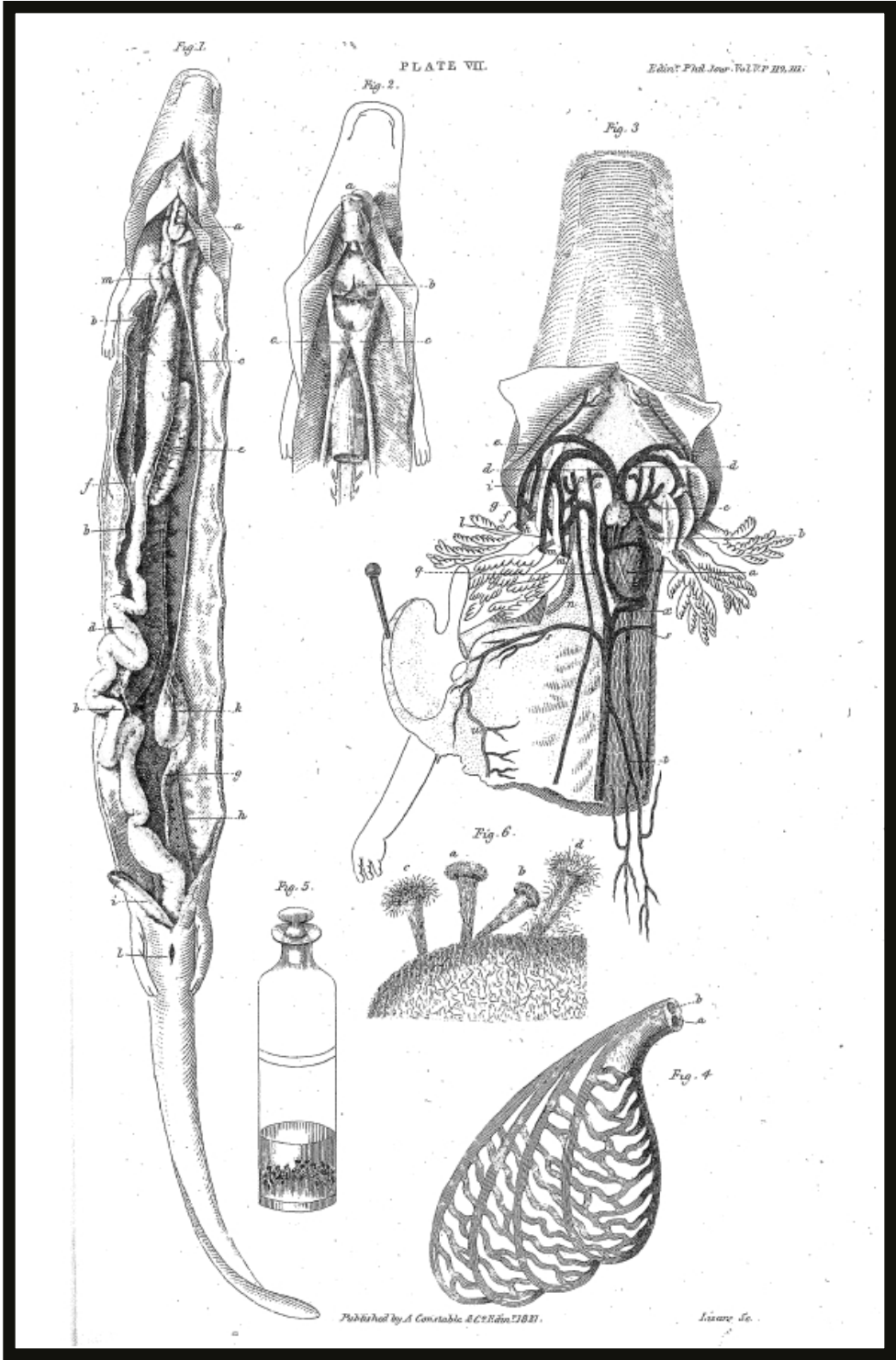
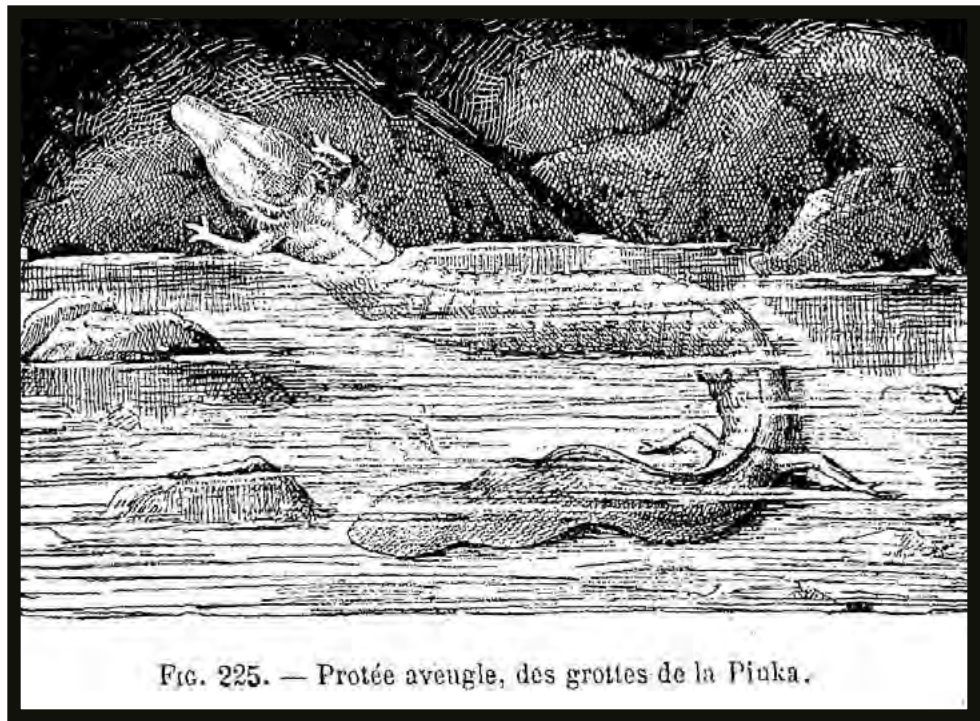


Fig. 2: The first picture of Proteus, published with Laurenti's description in 1768¹.
Sl. 2: Prva slika močerila, objavljena z Laurenti-jevim opisom l. 1768¹.

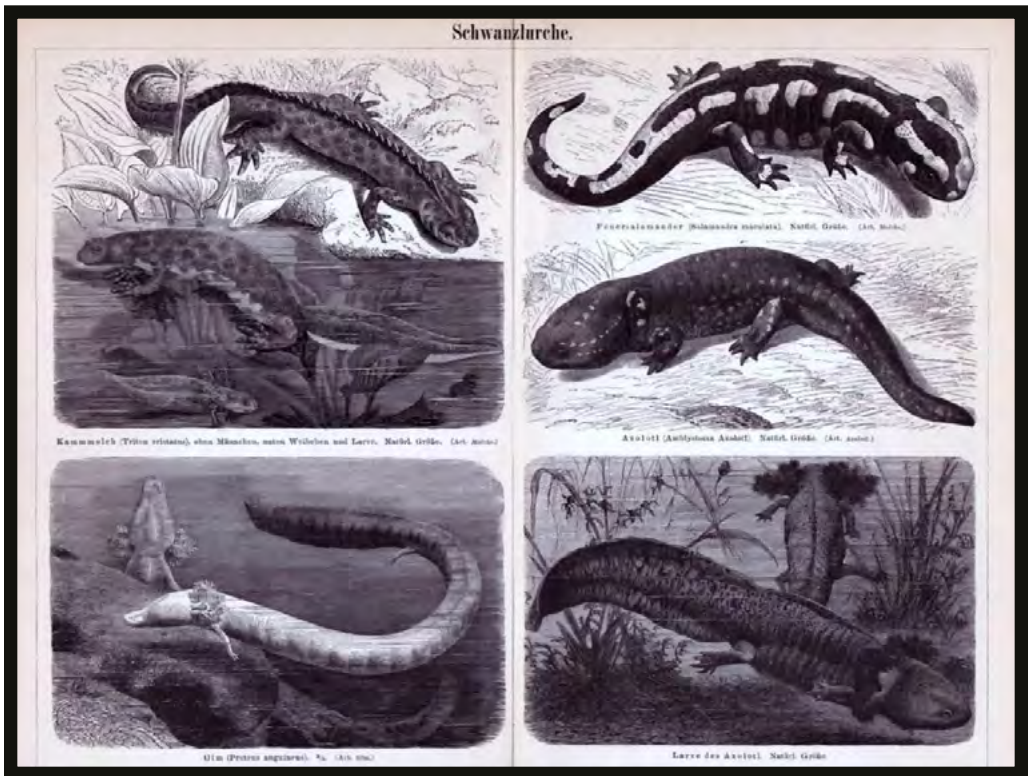




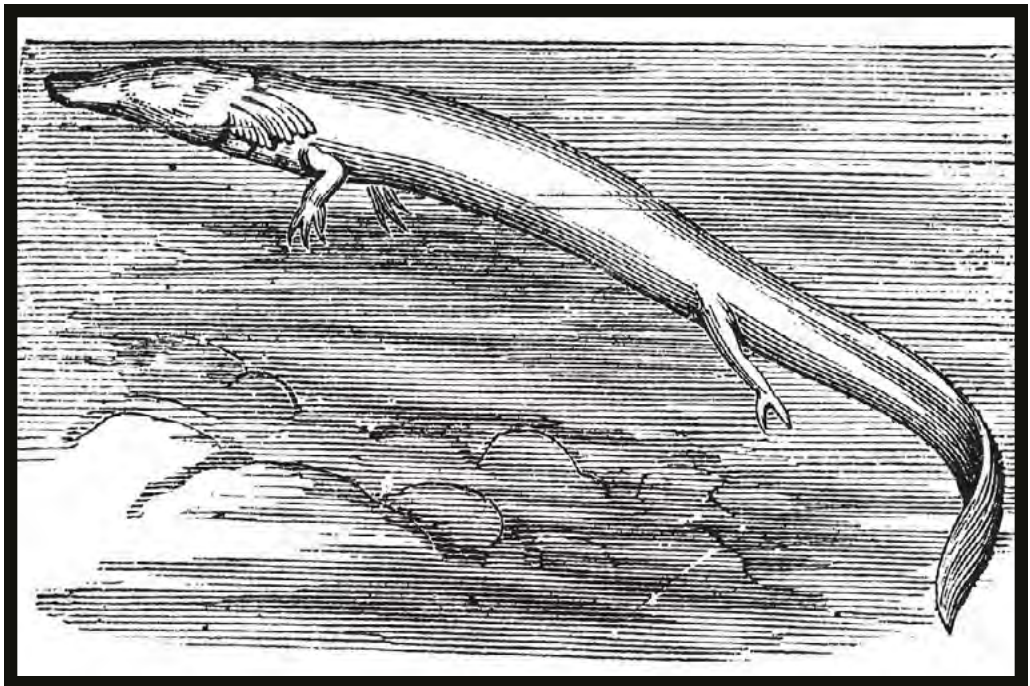
Gaston Bonnier, in *Le Monde végétal*, Paris,
Ernest Flammarion, 1907.
[https://gallica.bnf.fr/ark:/12148/bpt6k372623h/
f4.image.textImage](https://gallica.bnf.fr/ark:/12148/bpt6k372623h/f4.image.textImage)



Old engraving from 1889, author unknown,
bought by the artist on eBay.



Old engraving, author and date unknown.





STONE WELLHEAD

Image on a transparency of a stone wellhead. This stone wellhead, dating to the 10th or 11th century, was discovered near San Nicolò church in Venice Lido, Italy, and is now in the collection of the Kunsthistorisches Museum (Art History Museum) in Vienna, Austria. It shows what is believed to be two proteus carved on one of its side. It is considered to be the oldest depiction of a proteus.



BLOWN GLASS SCULPTURES



Five blown glass sculptures.



image © Miha Godec



image © Miha Godec



image © Annick Bureau



image © Miha Godec

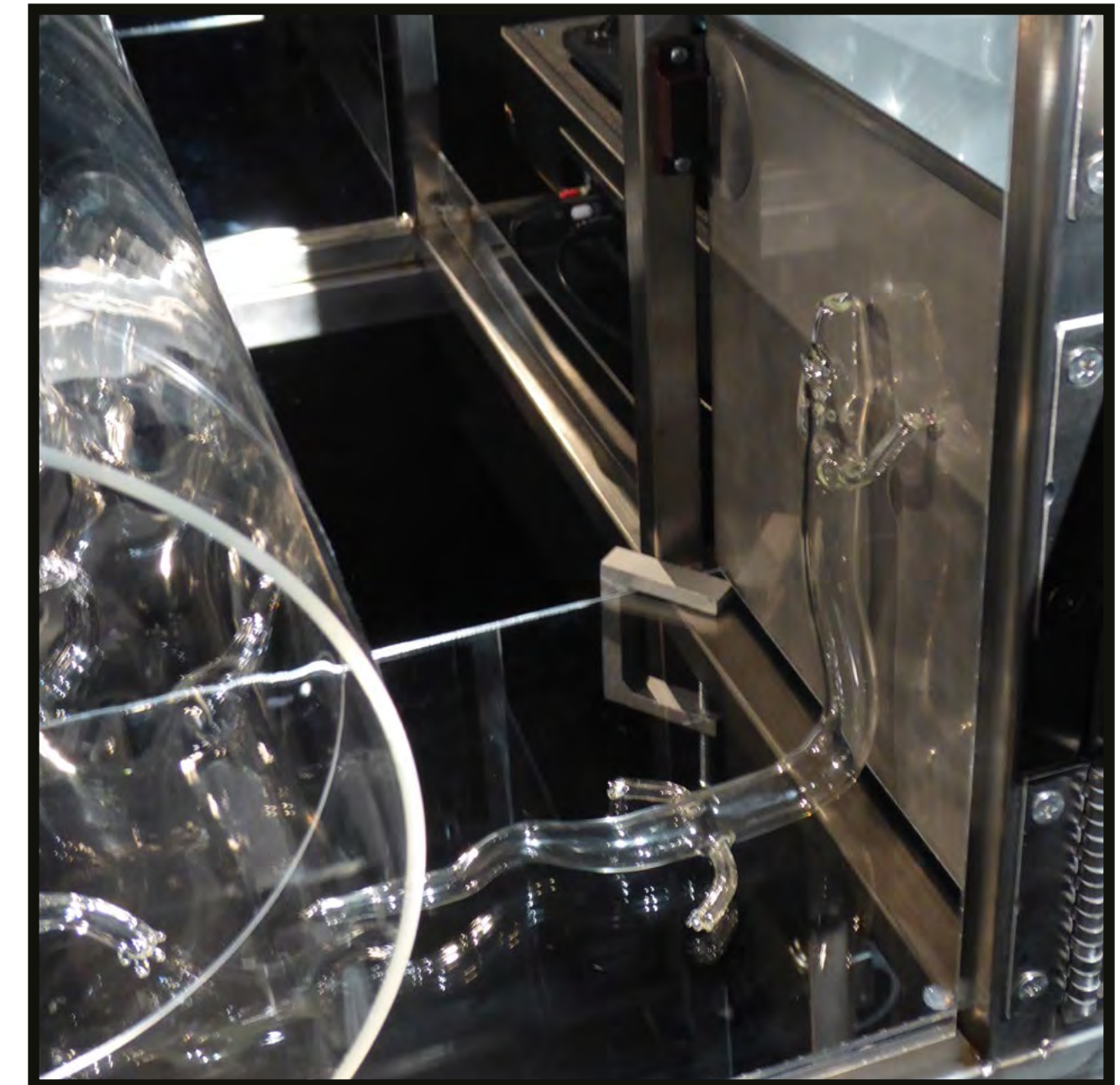


image © Annick Bureau

GLASS VESSEL WITH GLASS EGGS, A GLASS PLATE AND MAGNIFIER



Axolotl and proteus eggs look very similar. The laboratory glass vessel contains blown glass eggs suspended in water, each hosting a pearl. One is laid on a glass plate with a magnifier next to it.



image © Miha Godec



Coins

In 1991, Slovenia became independent from Yugoslavia, before joining the European Union in 2004 and, in 2007, the Eurozone. Between 1991 and 2007, the Slovene currency was the tolar. Among the coins, the 10 stolinov (10 cents) showed a proteus on the reverse. All the coins showed animals that live in Slovenia on the reverses.



image © Miha Godec

"Slovene Space Agency" Patch

This patch, reading "Slovene Space Agency", was designed by designers Boris Balant and Primoz Pislak and artist Dragan Živadinov as part of the art project "Biomehanika Noordung" in the Spring/Summer of 1999. It shows two proteus wearing helmets.



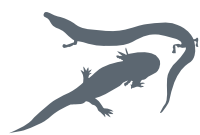
image © Annick Bureau

Stamps

2018 was the 250th anniversary of the first scientific description of *Proteus anguinus*. To mark this occasion, the Post of Slovenia issued a commemorative stamp featuring the animal.



CHOCOLATE PROTEUS



A white chocolate proteus on a dark chocolate base, displayed in a wooden box and sold as a Slovenian souvenir.



image © Annick Bureaud



Dark Drops (Lygophilia)

by Robertina Šebjanič, 2017 - 2018

Audio composition, vinyl record (20 min)
Field recording of drops of water and sound recordings done underwater in the underground river with hydrophone at the Planinska jama cave and Zelniške jame in Rakov Škocjan, Slovenia, processed into an audio composition. In the exhibition room, the sound is played both on a vinyl record and a sound loop on a Raspberry Pi.

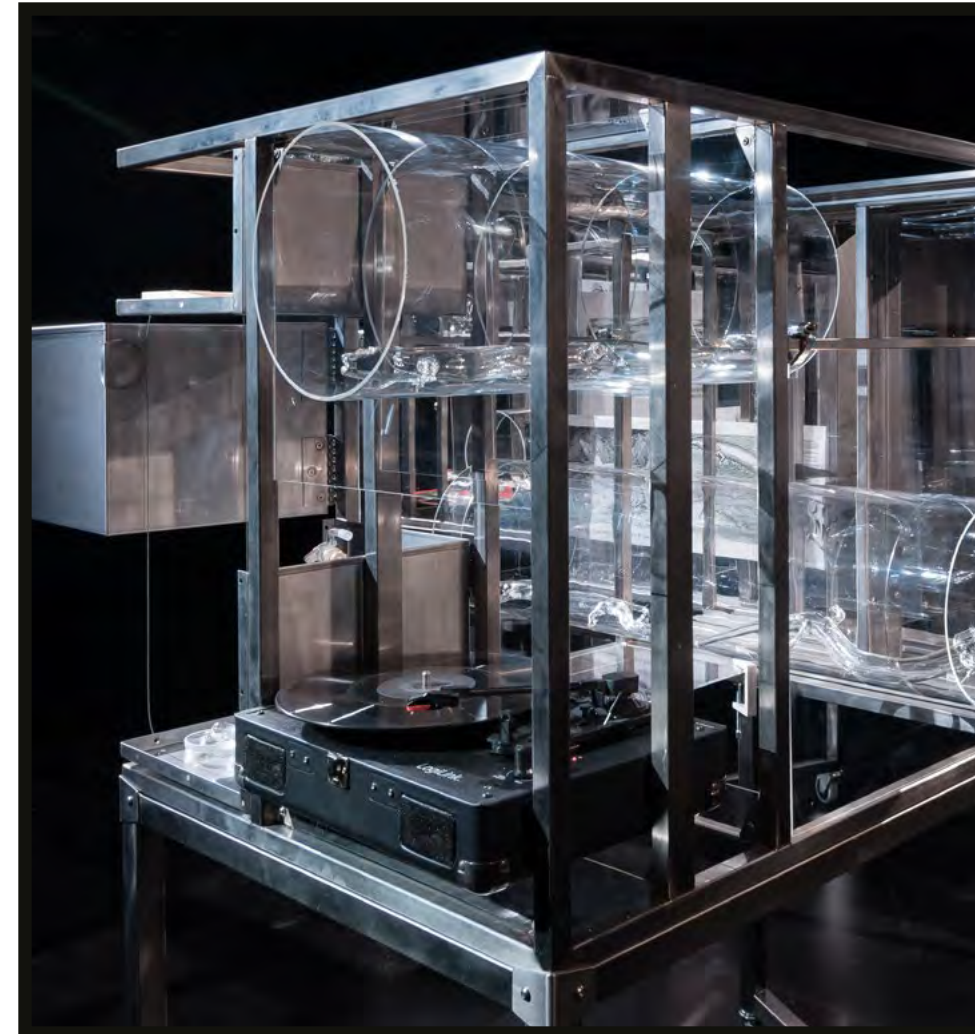


image © Miha Godec



Neotenous Dark Dwellers - Lygophilia | Robertina Šebjanič

Curator (*Osmo/za Gallery exhibition*) / Editor (*MemoRekall video capsule*): Annick Bureau

ARTWORK

Production:

Projekt Atol Institute (Uroš Veber), Slovenia, 2018

Arte+Ciencia (UNAM), Mexico 2017

Sektor Institute, Slovenia 2017 / 2018

Production support:

Ministry of Culture of Slovenia and the City of Ljubljana

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VIDEO

Recording: Miha Godec

Editing: Tanja Minarik, Robertina Šebjanič

SOUND

Recording and editing: *Dark Drops (Lygophilia)*, Robertina Šebjanič
2017 / 2018

MemoRekall video capsule

Documents the installation as it has been premiered at the Osmo/za Gallery in Ljubljana in 2018.

Production: Leonardo/Olats (Annick Bureau) with support from the Daniel and Nina Carasso Foundation.

Design: Quentin Aurat

Still images: unless otherwise credited all photos by Miha Godec

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REPUBLIC OF SLOVENIA
MINISTRY OF CULTURE

City of
Ljubljana

LEONARDO
OLATS

Carasso
Daniel & Nina
Fondation sous l'égide de la Fondation de France