Axolotl to Repair

Navigating an environment marred by pollution, the axolotl swims in the dark and grimy waters of Xochimilco Lake, smiling.

Axolotls are “the aquatic youth of the fire animal, the salamander” (Bartra 56). They are amphibious and enjoy a unique biological feature called neotenia which allows them to continue their life in a larval stage and not become land salamanders. Because of this, humans have variously cataloged axolotls as beings in “truncated development” (Bartra, 143), a “phyletic reversion” (Ibidem) or the “Peter Pan of salamanders” (WWF). But what is perhaps more interesting about axolotls is that they are even better equipped to repair themselves than their evolutionary “older cousins”, the salamanders. So, why become a salamander when it is possible to stay an axolotl?

The word Axolotl comes from Nahuatl, which is the language of the Mexicas (the name the Aztecs took on after building Tenochtitlán), and it carries several meanings. It is constructed from the words atl, meaning water, and xólotl, which can be translated as toy, twin, or monster: “‘water toy’, ‘aquatic monster’, ‘water twin’ […] but it is clear that it refers the God Xolotl” (Bartra, 83-84) . In the Mexica’s cosmovision, Xolotl ––out of skepticism for the practice–– refused the other gods’ demands to sacrifice himself and tried to escape his ordered death. This reflects axolotls’ capacity to avoid destruction. Through a curious genomic ability, these amphibians can regenerate their limbs, tissues, and cells[1]. If one of their extremities is lost, they can grow it back in a couple of weeks. Due to this feature, it is not surprising that the Mexicas also believed that Xolotl was the one responsible for recreating humanity after an extinction.

> I see an axolotl’s pin eyes and big smiling mouth; I like how its feathery gills move with the currents, like a penacho in the wind.
>
> *Jens Buss*

The 16th century Spanish missionary Andrés de Olmos recounted the Mexica legend of the creation of women and men in this way: Xolotl was elected by the other Gods to recreate humanity after it had been laid to ashes and dust. In order to do so, he would have to travel to the Micltán (the Place of Death) to acquire a human bone. Xolotl asked Mictlan Ttecuhtli (the Lord of Death) for permission to descend to his layer in search of the bone and at first the Lord of Death accepted. But once Xolotl entered,

MictlanTecuhtli changed his mind and began to pursue him. In his attempt to escape Micltan Tecuhtli's rage, Xolotl stumbled and dropped the human bone, shattering it. Xolotl collected the pieces and escaped, however, and successfully created humanity once more. According to the legend, the different sized pieces explain why some humans are taller than others.

Creating with remains, re-creating with the pieces of what was before. This mythical characterization echoes some challenges we face with reparations.

It is not only with remains that Axolotls create, though. Dr. Elly Tanaka, a biochemist expert on salamanders, leads one of the biggest studies on axolotls' regenerative processes. She states that fibroblast cells, "the ones that form scar tissue in humans", behave differently in axolotls. When their skin is injured, for example, axolotls' fibroblast cells "migrate to the skin cells and form a stem cell instead of creating a scar" (El ajolote en boca de todos, Revista Nexos). Axolotls use stem cells to recreate from the new.

Axolotls' rehabilitation is also defined by its precision. Dr. Tanaka explains: "When an Axolotl's hand is sliced off, it regenerates only the hand, but if the entire arm is lost it regenerates the whole arm. What we are trying to understand is how an extremity knows just how much needs to be regenerated; in other words, how are unnecessary duplications avoided, for example" (El ajolote en boca de todos, Revista Nexos). It's as though, after a trauma, axolotls know and recreate exactly what is essential for their lives.

Creating from remains, recreating from scratch; in place of scars, new beginnings.

We might imagine that having the possibility of always producing stem cells––young cells, newborn cells––Axolotls' systems could lack a memory of the damage. However, it should be mentioned that in some cases axolotls are not able to regenerate their limbs completely. We could understand this incomplete new extremity as the Axolotl version of a scar. I also wonder about how they experience even their "perfectly" regenerated tissues and members. Maybe they feel a scar instead of showing it.

But as a non amphibious being, I can only speculate about how axolotls feel their own reparations.

I see an axolotl’s pin eyes and big smiling mouth; I like how its feathery gills move with the currents, like a penacho in the wind. Little “water monster”, little “water dog”. I see an axolotl come up for air. When its head breaks the surface, and it opens up its smile, I can almost hear its whisper: let’s create from what remains, recreate from scratch and face our scars. We have a lot at our disposal and a(x)lot(l) to be repaired.

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1. The translation from Bartra’s text in this writing is my own. Thomas Grizzle translated Bertazza’s interview with Dr. Elly Tanaka, and helped me with editing in English.

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