

How fish innards inspire art

Joel Shurkin, *Science Writer*

Looking down a microscope at dead fish for eight months can change an artist's perspective on nature—and even influence her art. Textile artist Annet Couwenberg discovered such anatomical insights first hand when, in the summer of 2014, she embarked on a stint in the laboratory as part of the Smithsonian Artist Research Fellowship, a program that lets artists access the museum's vast collections. Her intense exploration of specimens in the museum's fish division allowed her to see the complexity of bony structural forms in high resolution and incorporate those forms in her work.

The Dutch-born Couwenberg uses fabrics, polymers, and buckram—a rough cotton common in book-binding—to mold large hanging or free-standing 3D structures. In her cluttered studio, located in the basement of her Baltimore home, bolts of cloth creased at regular intervals lie spread out on the floor or hang on the walls. Except for the large work table in the center, the space doesn't look much like a conventional

artists' studio. There are no paintings or statues, just a jumble of symmetrical constructions.

Couwenberg's fellowship project at the Smithsonian, called "Skeleton and Skin," was inspired by the X-ray imaging of fish and other water creatures, created by the Smithsonian's Sandra Raredon. Raredon's series explored the outer skin of the animals and the bones beneath, and Couwenberg was impressed by the combination of science and technology, as well as the beauty of the images. She decided that she wanted to use the museum's ichthyology collections to probe the relationship between bone structure and soft tissue—a 3D form symbiotically coupled to 2D planar surfaces—with the help of imaging technology and microscopic photography. To her mind, fish anatomy offers a natural analog to her own work as a fiber artist, because so much of what she does involves building 3D forms from planar structures.

After Couwenberg was accepted as a Smithsonian fellow, Lynne R. Parenti, a curator at the Division of



The delicate nature of fish bones and skin inspired this 2014 origami piece, called *Backstitch*. Image courtesy of Dan Meyers (© Dan Meyers Photography).

Fishes in the museum's Department of Vertebrate Zoology, visited Couwenberg's studio. The two hit it off immediately; Parenti told Couwenberg that the inherent beauty of nature was a big reason biology appealed to her as a student. Parenti's connection with the natural world goes beyond scientific investigation; she says she feels a certain reverence for items in the collection, citing one sturgeon specimen, pinned in a box, which is thought to have swum through waters a hundred years ago. Parenti, who grew up in a family of artists, quickly grasped Couwenberg's vision and showed her the ins and outs of the collection as Couwenberg designed her project.

At the Smithsonian, Couwenberg was permitted to wander at will through the collections, which she calls

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"a wormhole of knowledge." From the first, she felt an affinity for the seemingly endless well of preserved samples. "Can I live here?" she asked herself. Originally, her fellowship was supposed to last the two summer months of 2014, but she stayed on until last March.

Parenti frequently served as a guide to what Couwenberg saw. Looking down the microscope, Couwenberg would venture guesses about how different elements of the fishes' anatomy evolved, and Parenti—always the scientist—would ask her to support her guesses with structural observations, pushing her to think more deeply about the interweaving of form and function.

At first, Couwenberg tried using a 3D scanner to look at the structure. It didn't work. There just wasn't enough detail. So instead, she took a series of 48 photographs, scanned them into a computer image

program, and then used the software to slice through the images in as many layers as she could manage. Finally, she reconstructed them into a sculpture consisting of 505 slices of paper-thin buckram.

"What I'm really interested in is the methodology of nature," Couwenberg says. "Everything in nature has a purpose, and there is an economy of materials." Her close examination of fish specimens allowed her to ponder the complexity and symmetry in nature. She looked beyond skeletons and scales to internal organs, including the testes of an androgyne fish.

Couwenberg refers to her deep dive into fish biology as an epiphany. Many of these relationships she observed between the skin, bones, and organs of fish have become ones that she replicates in her art, using microscope photos and special software to construct her objects piece by piece from the inside out. "The methodology used by Parenti of slicing the fish using technology to inspect and observe the inner parts in comparison to the outer layers was something I have adapted," she says.

For Parenti, the experience underscored the commonalities between artist and scientist. They may have different approaches, but both spheres are trying to interpret the natural world. "An artist as a fellow in a science museum disrupts our way of thinking and seeing," Parenti says. "I offer access to the specimens and some specialized knowledge about them. What we get in return is a unique interpretation of its beauty and value."



This piece, called *Sturgeon Bone*, was inspired by a bone at the top of the fish's spine. It consists of 505 layers of laser-cut buckram. Image courtesy of Dan Meyers (© Dan Meyers Photography).