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# Tech composes the music of fish

By GAYLE WHITE  
The Atlanta Journal-Constitution  
Sunday, February 22, 2009

Imagine that the tail of every fish in the Georgia Aquarium played an invisible musical instrument.

Whale sharks might sound like bassoons. Angel fish, more like piccolos.

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Dr. Bruce Walker (right), project lead, and researcher Carrie Bruce watch fish during work on a Center for Music Technology project to make an aquarium visit an auditory experience.

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Dr. Bruce Walker, whose interest is in conveying information through sound, works on the Accessible Aquarium Project, which would help those with limited visual ability enjoy an aquarium visit.

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Notes would come fast and furious as fish chased each other. When swimming slowed to a legato, the tune would follow. Near the surface, a higher pitch; near the floor, lower.

The Accessible Aquarium Project is just one of the innovative musical efforts under way at Georgia Tech, which last fall launched a new Center for Music Technology.

Researchers recently demonstrated a small electronic version of the aquarium project with a fish tank outside the Georgia Aquarium's gift shop. The idea is for visually impaired visitors to access the experience through sound. But the program adds an auditory dimension even for those with perfect vision.

Listeners can tell when a new fish enters the range, what kind of fish he is and in what direction he's moving. Eventually participants will be able to choose their favorite type of music. Bluegrass anyone? Jazz? Classic rock?

The Accessible Aquarium project is an example of collaboration among several disciplines at Georgia Tech.

Bruce Walker, an associate professor in the School of Psychology and the School of Interactive Computing, is heading the aquarium team. His research focuses on ways to use sound to convey information, an interest he developed while working for the National Aeronautics and Space Administration.

Astronauts can't always sit in front of a control panel, he said, so engineers had to find ways to transmit numbers and data to people who aren't watching a computer screen. The answer? Transforming visual information into sound.

In its simplest form, the concept might mean a run up and down (mostly down these days) the musical scale to demonstrate the trajectory of the stock market.

In a much more sophisticated format, it means using the expertise of Tucker Balch in Tech's School of Interactive Computing to trace the movement of fish, and music technology center director Gil Weinberg's knowledge to translate movements into music.



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The team is mapping fish movements and adding computer-generated music to video from the Georgia Aquarium.

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There are other inventions.

There's Shimon the robot percussionist, and a glove that teaches piano, and software that lets cellphone users compose, play, record and transmit their own music.

Tech researchers are also using their engineering skills to build better musical instruments, let audiences interact with musicians, and allow performers to control their own light shows with the notes they play.

In a studio on the Tech campus in Midtown Atlanta, Frank Clark, director of Tech's music department, recently demonstrated keyboard-driven images with changing colors, intensity and speed as he played the theme from "Sesame Street."

Controlling images and lighting as well as sound "really makes you think differently," Clark said. Sounding a bit like a paraphrase of the rock opera "Tommy," he added: "You can see. You can hear. You can feel what's in your head and heart, and share that with other people."

More than 20 Georgia Tech researchers from the arts, sciences and engineering are part of Tech's Center for Music Technology.

"Our goal is to build an international center for creative and technological research in music that will redefine the way we create, perform, listen to and consume music," said Weinberg, director and co-founder of the center.

"Very impressive," said Thomas Martin, a computer programming major at Griffin Tech, when he saw the demonstration at the Georgia Aquarium.

Oliver Van Parys, a guest services employee of the [aquarium](#), raised another possibility — a home version of the fish music program.

"I would totally buy something like this," he told Tech researcher Carrie Bruce. "And if the music got boring, I'd get more exciting fish."

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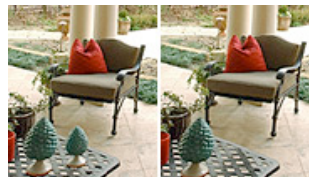
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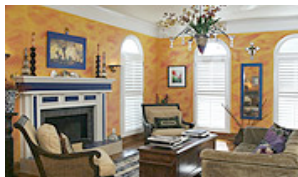
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