



A Kinetic Sculptor



The fundamentals of mechanical engineering inform every piece of Arthur Ganson's moving sculptures.

By Jeff O'Heir

Photos By
Chehalis Hegner

Just like their maker, the mechanically complex and quirky works of Arthur Ganson are filled with contradictions.

Take, for example, one of his most popular pieces, "Machine with Wishbone." Ganson secured the legs of a turkey wishbone with a wire harness and connected it to a set of spindly flywheels riding on a simple chassis. The flywheels spin, the harness pulls, and the wishbone takes one lumbering step after another.

Perhaps the frail wishbone is engaged in the Sisyphean task of perpetually dragging around intrusive technology. Maybe the benevolent machine is helping the wishbone complete its lonely journey. In Ganson's world, there's no one right answer.

The way he builds his kinetic sculptures makes it easy to interpret them in any of these ways, and that speaks to the contradictions in the man himself.

Ganson, who is as much an engineer as he is an artist, works with unpolished steel, found objects, homemade gears, and roughly soldered wires. Yet he assembles them with such care that their movements create an elegant and mesmerizing beauty. His machines may reflect strong and dark emotions, but they share a sense of humor that draws smiles, if not outright laughter.

"There's something very clear in every machine, and there's also something that's also very open-ended," Ganson said. "The clarity allows people to grasp and hold onto something, while the ambiguity allows them to create their own story and their own meaning."

Whatever theory lies behind the work, people like what they see. Audiences, such as the one at a TED Talk Ganson gave a few years back, often cheer and clap when they see videos of his sculptures. Twenty-one of his pieces have been featured by the MIT Museum since it opened in 1995, and the museum's 140,000 yearly visitors consistently rank it as their favorite exhibit.

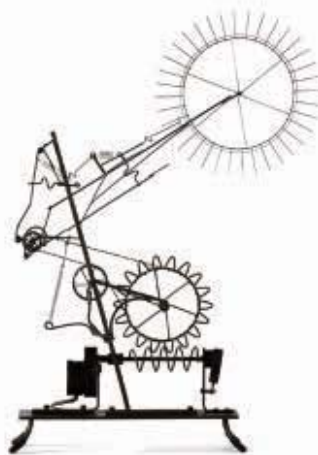
"We don't like having to close that exhibit," museum director John Durant said after reopening "Gestural Engineering: The Sculpture of Arthur Ganson" after months of renovations. "We have too many disappointed visitors."

Despite nearly 40 years of creating popular sculpture, Ganson is still considered an outsider as an artist.

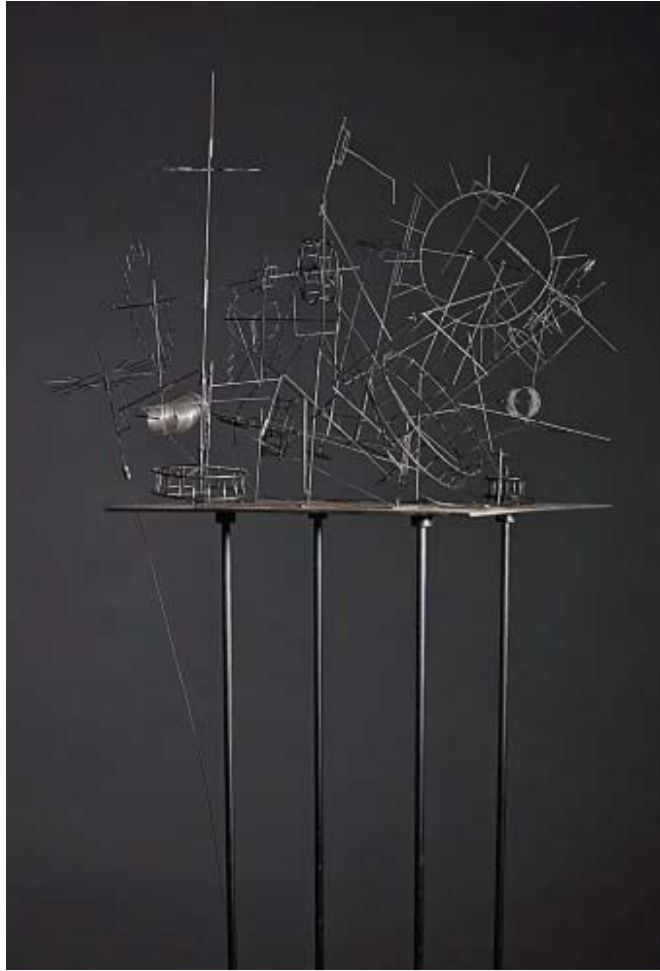
His permanent installations tick, whiz and hum at the National Inventors Hall of Fame in Ohio and at the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation. His work has been featured at numerous museums and galleries around the world, and he has even appeared in "Muffy's Art Attack," an episode of the children's cartoon *Arthur*.

Still, Ganson's work has never been considered part of the mainstream or championed by the day's tastemakers.

"He doesn't follow what those in the art world follow," said Jeff Lieberman, a fellow kinetic sculptor who helps run Ganson's F.A.T. (Friday After Thanksgiving) Chain Reaction, a yearly event that brings aspiring engineers of all ages onto the MIT campus to create a massive Rube Goldberg device. "He doesn't seem to care about any trends. He's off doing his own thing and not subject to the same types of rules. He's an outsider artist."



Portrait
of J.H.



While most
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spend their
careers
hiding the
pieces that
make their
machines
move,
Ganson
reveals his.

Fragile Machine

But if art's mainstream doesn't seem to know what to make of him, Ganson knows who and what he is. Like Henry Ford, Cyrus McCormick, and Eli Whitney, he is a self-taught mechanical engineer.

"All the concerns and thoughts I have are a subset of the world of mechanical engineering," Ganson said. "Any mechanical engineer looking at the sculpture will find an echo or mirror of the engineering process."

The main appeal of Ganson's work lies within yet another contradiction. While most engineers spend their careers hiding the pieces that make their machines move, Ganson reveals his. The clever combination of spinning wheels, creeping chains, and revolving cranks and cams unveils the mystery of the machine.

"Arthur hides nothing," said MIT's Durant. "He's interested in exposing as much of the work as possible so that you get the intricacies of mechanical engineering. That intrigues people."

In "Corey's Yellow Chair," for example, a tiny chair hovers above a black board, surrounded by a star-shaped chain. At each of the star's six points, a set of gears drives a metal arm and rod attached to a precut section of the chair. As the chain advances, the arms rotate and send sections of the chair flying to the edge of the board. There, they spin slowly, then rapidly fall back into place.

It's like watching an explosion moving both forward and in reverse. Ganson says it's an attempt to capture the essence of vision.

In another work, "Machine with Oil," a wire arm slowly swings into a small trough filled with oil. When the chain-driven gear raises the arm to the top of

*Machine with
Wishbone*

its cycle, the trough empties its load, bathing the machine's parts in a rich, thick coating of 70-weight motor oil. As Ganson wrote in a short vignette about the work, "For a machine, could there be anything more satisfying?"

Whatever humor or meaning Ganson's sculptures impart, movement is their most important element.

"It is one of the things that initially draws people into my work," he said. "It's based on the long association we have with machines in our lives. My sculptures are machines, but they have a function that's not perceived as utilitarian. There's a humor that's inherent in a machine when it's not functioning in a utilitarian way."

In fact, his sense of humor is what led to the walking wishbone. Ganson came up with the idea during a Thanksgiving dinner, while playing with his food. He could make the turkey wishbone waddle like a cowboy, and wondered how he could make it move on its own.

Communicating through Movement

Ganson himself is as contradictory as his work and career. He's tall and bald. When he lets his mustache grow in, he looks a bit intimidating. His hands are big and his nails usually dirty. But he uses his long fingers to patiently bend wires into gears or delicately craft small pieces of metal into sculptures that typically stand less than two-feet tall.

You could picture him working on a construction site with a dog-eared book by Camus stuffed in his back pocket. Or sitting quietly behind a table making a watch. Or playing with a Thanksgiving

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When asked about his work, he launches into comprehensive, multifaceted answers. It's clear he likes to talk. But that wasn't always the case.

While growing up in Bloomfield, Conn., he was a painfully shy child who was afraid to talk to other people. He found it much easier and comforting to express himself by drawing pictures and creating simple sculptures from wood, cardboard, and other available materials.

On aptitude tests, Ganson proved a slow reader, but he was quick to figure out the spatial relationships of objects. What he couldn't do with his voice, he did with his hands. "Making things for people and creating with my hands in the safety and solitude of my basement was the safest way to communicate," he said.

During elementary school, Ganson developed his interest in movement. He found new ways to express himself by making a flipbook movie of a speeding car, or an ice sled made from shortened skis propelled by a gas-powered model-



*Machine with
Roller Chain*

airplane engine.

In high school, he became intrigued by more than physical movement. He fell in love with the logic and orderly flow of computer programming. “It’s kind of amazing that I didn’t get into computer programming,” he said. “But there was something missing in it, which was the human contact.”

Instead, he took premedical courses and studied art at the University of New Hampshire, with the intention of becoming a surgeon. “I loved working with my hands in very critical situations,” Ganson said. Yet he hated the amount of rote memorization that was required for a career in medicine.

As a result, he focused solely on art: “I had found something that allowed all of these different parts of me to come together. A lot of this was accidental. I was just following my intuition.”

An assignment for a 3-D design course drew him to mechanical sculptures. For one project, he soldered together wires to make a small car that could be powered by houseflies. For another, he drew up a mock experi-

ment where he glued the end of a pin to a fly and attached it to the blade of a pinwheel. His plan was to heat it to various temperatures to see how temperature affected their flight speed.

“That would never work,” he said of the concept. But each project drove him to explore new mechanical possibilities. He soon learned that with the right combination of design, materials and execution, he could create functional mechanical sculptures that represented specific ideas.

A revelation came when one of his art teachers introduced him to the work of Swiss artist and kinetic sculptor Jean Tinguely, whose use of exposed gears and movement immediately influenced Ganson’s style, medium, and materials.

“You could do anything with wire,” Ganson said. “That opened a part of my brain that loved to solve problems in three dimensions.”

The Art of Engineering

If Ganson speaks like an engineer, that’s because he is one, despite his lack of a formal engineering education. He spent as an artist-in-residence in MIT’s mechanical engineering department. “With every piece I make, I’m in school,” he said.

To construct each sculpture and engineer its movement, he relies on the fundamentals of mechanical engineering and physics the same way that a painter uses color theory as a guide for creating a visual effect. The art, for Ganson, is inseparable from the engineering.

“I basically do what mechanical engineers do, but I do it for a different

outcome,” he said. “In my work, every decision is based on a physical, utilitarian, and emotional aspect: How does it work; how does it feel? I’m always thinking of both.”

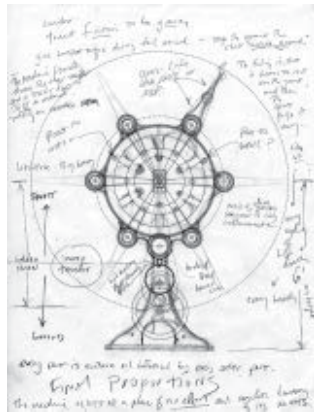
Ganson said this while talking on speaker phone in the kitchen on a sprawling farm north of Chicago, where he moved recently after living for many years in the Boston area. His wife, the photographer Chehalis Hegner, sat within earshot.

“Arthur wouldn’t say this,” she chimed in, “but I can’t tell you how many times engineers from MIT and kids in grade school have said they want to be engineers because Arthur’s work inspired them. They say, ‘You showed me that engineering can be creative and inspiring.’”

Lieberman, the kinetic sculptor, was one of those students. Lieberman, who was also the former host of the Discovery Channel’s *Time Warp*, first saw Ganson’s work while visiting the MIT Museum during a campus tour. “I was blown away because it was the first time I saw someone combining engineering and art,” he said.

After he was accepted to the school, he would frequently visit the museum to sketch the sculptures, reverse engineer them to better understand how they worked. He applied those lessons while earning MIT degrees in mechanical engineering, physics, math, and media arts and science.

Ganson’s work also influenced Lieberman beyond the classroom. “The thing I missed most in my education, which is the most fun thing about learning, is being able to figure out, ‘How would I do this,’” Lieberman said. “When I see his work, my brain asks, ‘How does he make a wishbone look



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Moving Toward the Future

For Ganson, that search continues. He has been exploring new avenues of creativity since moving to the farm. Some of those projects are certain to add new sets of contradictions to his legacy. He spent most of the winter, for example, renovating a few old barns into studios where he’ll build larger pieces to flesh out his portfolio of small, intimate work.

He is also planning to mass-produce sculptures of his more popular work to sell online, starting with Cory’s Yellow Chair. To produce them, he’ll have to develop a more standardized form of manufacturing that will undoubtedly smooth out some of rough, handcrafted features that make his work so approachable.

He’s also looking forward to getting a 3-D printer. “I can’t wait,” he said. “But there’s another part of me that just wants to bend wire.”

With that in mind, Ganson is delighted to report that the farm is inundated with insects. The creatures will give him a chance to revisit his early attempts to harness a bug’s energy to drive tiny machines.

“Machines are an embodiment of my joy and my love for engineering,” he said. “Maybe that’s the most important thing.”

And it’s also the thing that ties together all of his contradictions. **ME**

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