

The CHRISTIAN SCIENCE MONITOR

- WORLD
- USA
- COMMENTARY
- MONEY
- ENVIRONMENT
- INNOVATION
- SCIENCE
- THE CULTURE
- BOOKS

Innovation / Tech All Innovation Topics

Subscribe | E-mail newsletters | RSS

How a computer program became classical music's hot, new composer

'Emily Howell' is a computer program that composes classical music by following rules of music its programmer taught it.



David Cope, professor of music emeritus at the University of California- Santa Cruz, holds a laptop in his home office with a musical score composed by his computer program, which he calls 'Emily Howell.' Emily has composed around 20 pieces of classical music.
Tony Avelar/The Christian Science Monitor

[+ Enlarge](#) [Photos \(1 of 2\)](#)

More Innovation

 Horizons
Facebook again taken to task on user security

-
-
-
-
-
-
-

Like You and 31 others like this. 31 people like this. · [Admin](#)
Page · [Error](#) [Unlike](#)

About these ads

Subscribe to the weekly *Monitor* and save 71%!

By [Matt Rocheleau](#), / Contributor / June 17, 2010

Earlier this year, 6-year-old musical prodigy Emily Howell released an 11-track debut album, resembling the work of history's most renowned classical composers. But instead of receiving the praise given to Beethoven, Mozart, or Bach, the California native has become a lightning rod for controversy within the musical community.

Why? Because Emily is not human.

Emily is a computer program, and "her" ability to write original compositions has called into question whether art is as uniquely human as many like to believe.

"Can computers be creative? In the sense that they are creating something that wasn't there before, yes," says David Cope, Emily's programmer and professor emeritus at the University of California, Santa Cruz. "But so can birds and insects and volcanoes. We have reserved this notion of creativity for humans for a long time, and we are enamored of it."

As he sees it, creativity has never been a human-defining trait. This feeling of his stretches back

Most viewed

1. [Bigfoot discovered? Virginia man says he's on verge of Bigfoot discovery](#)
2. [Jeremy London kidnapping: California man arrested](#)
3. [Deadliest Catch to honor Capt. Phil Harris](#)
4. [How an Alabama fire chief risked jail to save town from Gulf oil spill](#)
5. [Studies suggest MMS knew blowout preventers had 'critical' flaws](#)
6. [Five crucial moves by BP: Did they lead to Gulf oil spill disaster?](#)
7. [Report: What does Obama's global popularity bring the US?](#)
8. [Billionaires Bill Gates, Warren Buffett want other billionaires to donate more to charity](#)
9. [In Waxman, BP execs face a master interrogator at Gulf oil spill hearing](#)
10. [Drug recall expands: More Tylenol, Benadryl recalled due to moldy smell](#)

three decades, to when Mr. Cope first dabbled in teaching music to computers. After hitting a dead end while trying to write new music on his own, Cope created a program called EMI, which he pronounces as "Emmy."

EMI (Experiments in Musical Intelligence) would analyze the work of human composers, pick up on their musical styles, and generate new work seemingly written by the original musician. EMI created "zillions" of compositions before being scrapped for Cope's latest project, he says.

Created in 2003, Emily has only written around 20 songs. It synthesizes its own compositions according to the rules of music that Cope has taught it. And Emily is only fed music that EMI had composed, which gives the new work its own contemporary-classical style.

Human musicians perform most of Emily's compositions, though one song on the album credits three Disklaviers, pianos played by machines.

Cope says he decided to give the software a human name – which has led some to believe it's a real person – because he did not want people to think of Emily as a novelty. Nor did he want her true identity to prejudice listeners either toward or against the music. Some who praised Emily's work before they knew who "she" was, later played down their reactions after learning the music was written by a computer, Cope says.

Some composers seem threatened by a computer program that can produce original compositions, he says. But Cope points out that Emily is still, on some level, a human creation.

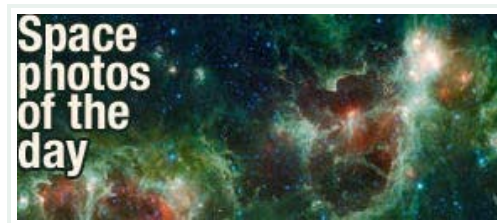
"If people were able to [program a computer to be creative], would it make us more or less creative?" Cope asks. "I'd say more."



Like You and 31 others like this. 31 people like this. · Admin Page · Error Unlike

Subscribe to the new weekly Monitor and save 71%!

In Pictures



Space Photos of the Day 06/17

Photos of the day

06.17.10 >



Supreme Court rules against homeowners in Florida beach dispute

The Supreme Court ruled against a group of waterfront property owners who said the state of Florida owed them money because it pumped sand onto beaches eroded by storms, lowering property values.

Flipper bridge could sort out Hong Kong traffic switch [Video]

Supreme Court backs police department that read employee's texts

Gas stations boycott won't hurt BP. Is there a better protest?

Terrorism & Security

EU set to follow US in upping sanctions on Iran

About these ads

FREE Daily Digest E-mail

CSMonitor.com top stories, cartoons and photos



Sign up!

[See sample](#) | [Privacy Policy](#)

What happens when ordinary people decide to pay it forward? Extraordinary change. See how *individuals are making a difference...*



Babar Ali stands in front of students who have gathered at the afternoon school he began in his parents' backyard in Bhabta, a village in eastern India.

A passion for learning results in a school for India's poorest children

Babar Ali, just a teenager himself, has started a free school in his parents' backyard for the poorest children in his village in India's West Bengal region.

Become part of the Monitor Community

14,550 Fans | 5,520 on Twitter | 700K RSS subscribers



Get 4 FREE issues ►►



THE CHRISTIAN SCIENCE MONITOR

USA »



How the Knight Commission would recast college sports

The Culture »



'Toy Story 3': Pixar's 'Toy Story' movies keep getting better and better

World »



Facebook draws 7,000 to anti-Muslim pork sausage party in Paris

USA »



NBA Finals: Celtics, Lakers have game 7 date with history

Innovation »



How a computer program became classical music's hot, new composer

World »



Africa Monitor: South Africa World Cup hopes dashed by Diego Forlan

Ads by Google

[\(About these\)](#)

[Learn Music Composition](#)

Get Your Music Production Bachelors Degree at Full Sail University!

www.FullSail.edu

[Romantic Classical Music](#)

Sponsored Links

Booking Agency
Grabow Entertainment Agency
Business Resources
Business Cards
Checks
Computers

Graphic Design
Logo Design - LogoBee
Real Estate
International Shipping
Mortgage Calculator
Moving
Moving Companies

Speakers Bureau
Christian Speakers
Motivational Speakers
Sports Speakers Bureaus
Web Services
Dedicated Servers
Web Hosting

Local Guides

Alabama
Alaska
Arizona
Arkansas
California

Vast selection of high quality recordings by great artists.

Passionato.com/Romantic

[Learn Orchestration](#)

Study Orchestration Online with Berklee College of Music.

www.berkleemusic.com

[PowerEdge Memory](#)

[Real Estate](#)

[Charitable Donations](#)

[Car Donations](#)

[Boat Donations](#)

[Colorado](#)

[Connecticut](#)

[DC](#)

[Delaware](#)

[Florida](#)

[Georgia](#)

[Hawaii](#)

[Idaho](#)

[Illinois](#)



Ads by Google

[About these ads](#)

[Home](#) | [About](#) | [Site Map](#) | [Monitor Topics](#) | [Contact Us](#) | [Subscribe](#) | [Text](#) | [Specials](#) | [Multimedia](#) | [Make Us Your Home Page](#)
[Careers](#) | [Corrections](#) | [Find us online](#) | [Advertise With Us](#) | [Monitor Mall](#) | [Today's Article on Christian Science](#)

© The Christian Science Monitor. All Rights Reserved. [Terms](#) under which this service is provided to you. [Privacy Policy](#).

The CHRISTIAN SCIENCE MONITOR

- WORLD
- USA
- COMMENTARY
- MONEY
- ENVIRONMENT
- INNOVATION
- SCIENCE
- THE CULTURE
- BOOKS

Innovation / Tech All Innovation Topics



Subscribe | E-mail newsletters |  RSS

How a computer program became classical music's hot, new composer

'Emily Howell' is a computer program that composes classical music by following rules of music its programmer taught it.

(Page 2 of 2)



 Like  You and 31 others like this. 31 people like this. · Admin Page · Error Unlike

He believes that Emily, which is "nowhere near artificial intelligence," and other artistically able machines signal a chance for collaboration with human artists, not a digital replacement for them. "Computers are there [for us] to extend ourselves through them," he says. "It seems so utterly natural to me. It's not like I taught a rock to compose music."

Los Angeles Times classical-music critic Mark Swed says although he has received copies of Emily's works, he has not listened to them yet, in part because the composer is a computer.

Fred Childs, host of the popular public radio show "Performance Today," says he was impressed with Emily's songs.

"I enjoyed them," Mr. Childs says. "I thought they were really accomplished imitations of other composers' styles." However, "it felt a little mechanical in a way. But then again, I knew I was listening to a computer," he added. "If I hadn't known that, I might've thought it's the work of some not-so-great composer who is trying some interesting things, but not quite getting it."

The fact that a computer can create music that's indistinguishable from what a human can compose "scares" Childs a bit, but he says he has no problem with the idea of computers writing music.

"The proof is not in who composes it or who is responsible for writing the notes. The proof is in the emotional reaction the music triggers," he says. Emily "wasn't quite there" in terms of sparking his emotions.

Childs's sentiment touches on one of the core problems with computers experimenting with music. In 2008, a study from the University of Sussex in England found that, even when a person does not know the source of a performance, the human brain has a stronger emotional response to music played by humans than work performed by a computer.

Similarly, some question Cope's assertion that Emily is truly an artistic machine. "I think there's a creative aspect to music that is still well beyond what a computer can do," says Aniruddh Patel, a

More Innovation



Horizons
Facebook again taken to task on user security

Looking for the best way to read the latest book reviews or daily blog posts from the Monitor?

SIGN UP FOR A MONITOR EMAIL NEWSLETTER

They're FREE!!

About these ads

Subscribe to the weekly *Monitor* and save 71%!

Most viewed

1. Bigfoot discovered? Virginia man says he's on verge of Bigfoot discovery
2. Jeremy London kidnapping: California man arrested
3. Deadliest Catch to honor Capt. Phil Harris
4. How an Alabama fire chief risked jail to save town from Gulf oil spill
5. Studies suggest MMS knew blowout preventers had 'critical' flaws
6. Five crucial moves by BP: Did they lead to Gulf oil spill disaster?
7. Report: What does Obama's global popularity bring the US?
8. Billionaires Bill Gates, Warren Buffett want other billionaires to donate more to charity
9. In Waxman, BP execs face a master interrogator at Gulf oil spill hearing
10. Drug recall expands: More Tylenol, Benadryl recalled due to moldy smell

senior fellow at The Neurosciences Institute in San Diego.

Others have argued that Cope's invention and his claims that its work is truly creative is disrespectful to artists who put passion, emotion, and feelings into their work based on years of human experience – something a computer can't share.

But Cope says he welcomes such criticism. "I want people to have different ideas than me," he says. "My wife will tell you one of the strangest things about me is I enjoy the controversy.... As a teacher that's how you learn things."

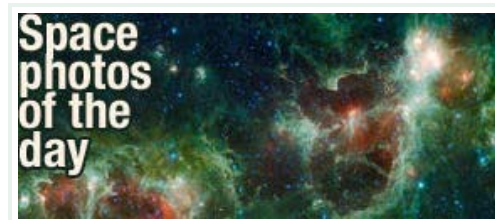
Emily's album, "From Darkness, Light," is available in some music shops and through Apple's online iTunes Store. Cope says the young composer will follow up with a new album annually for the next five or six years.



Like You and 31 others like this. 31 people like this. · Admin Page · Error Unlike

Click here to receive the next full month of the Daily News Briefing – a new news service from The Christian Science Monitor – ABSOLUTELY FREE!

In Pictures



Space Photos of the Day 06/17

Photos of the day

06.17.10 >



Flipper bridge could sort out Hong Kong traffic switch [Video]

Flipper bridge: In Hong Kong, people drive on the left. In mainland China, they drive on the right. A Dutch architectural firm has proposed a solution for traffic between the two places.

Supreme Court backs police department that read employee's texts

Gas stations boycott won't hurt BP. Is there a better protest?

Terrorism & Security

EU set to follow US in upping sanctions on Iran

UN condemns Somalia's use of child soldiers, but US aid still flows

About these ads

FREE Daily Digest E-mail

CSMonitor.com top stories, cartoons and photos

Sign up!

See sample | Privacy Policy



What happens when ordinary people decide to pay it forward? Extraordinary change. See how *individuals are making a difference...*



Babar Ali stands in front of students who have gathered at the afternoon school he began in his parents' backyard in Bhabta, a village in eastern India.

A passion for learning results in a school for India's poorest children

Babar Ali, just a teenager himself, has started a free school in his parents' backyard for the poorest children in his village in India's West Bengal region.

Become part of the Monitor Community
 14,550 Fans | 5,520 on Twitter | 700K RSS subscribers

Get 4 FREE issues ►►

THE CHRISTIAN SCIENCE MONITOR

The Culture »



'Toy Story 3': Pixar's 'Toy Story' movies keep getting better and better

World »



Facebook draws 7,000 to anti-Muslim pork sausage party in Paris

USA »



NBA Finals: Celtics, Lakers have game 7 date with history

Innovation »



How a computer program became classical music's hot, new composer

World »



Africa Monitor: South Africa World Cup hopes dashed by Diego Forlan

Innovation »



Horizons: Apple gives the Mac Mini the extra-Mini treatment

Ads by Google (About these)

Computer Deals at Dell
 Find Specials on High Performance Computers w/ 2010 Intel Core.
www.Dell.com

Learn Music Composition

Sponsored Links

Booking Agency	Graphic Design	Speakers Bureau
Grabow Entertainment Agency	Logo Design - LogoBee	Christian Speakers
Business Resources	Real Estate	Motivational Speakers
Business Cards	International Shipping	Sports Speakers Bureaus
Checks	Mortgage Calculator	Web Services
Computers	Moving	Dedicated Servers
	Moving Companies	Web Hosting

Local Guides

- Alabama
- Alaska
- Arizona
- Arkansas
- California

Get Your Music Production Bachelors Degree at Full Sail University!

www.FullSail.edu

Romantic Classical Music

Vast selection of high quality recordings by great artists.

Passionato.com/Romantic

[PowerEdge Memory](#)

[Real Estate](#)

[Charitable Donations](#)

[Car Donations](#)

[Boat Donations](#)

[Colorado](#)

[Connecticut](#)

[DC](#)

[Delaware](#)

[Florida](#)

[Georgia](#)

[Hawaii](#)

[Idaho](#)

[Illinois](#)



Ads by Google

[About these ads](#)

[Home](#) | [About](#) | [Site Map](#) | [Monitor Topics](#) | [Contact Us](#) | [Subscribe](#) | [Text](#) | [Specials](#) | [Multimedia](#) | [Make Us Your Home Page](#)
[Careers](#) | [Corrections](#) | [Find us online](#) | [Advertise With Us](#) | [Monitor Mall](#) | [Today's Article on Christian Science](#)

© The Christian Science Monitor. All Rights Reserved. [Terms](#) under which this service is provided to you. [Privacy Policy](#).