# Pro

"I think that there's a large demographic of people who are really interested in cutting-edge art and bleeding-edge electronic music."

# BT: Binary Universe

**By Dustin Driver**

To BT, it's all ones and zeros. "Music is just applied mathematics", he says. "And so is visual art — it's all related. You're just dealing with colour instead of the audible spectrum". For this musician-composer-sound artist, the universe is, simply put, binary. And his latest project is a pure expression of that philosophy, an artistic fusion of digital music and motion, wrought in surround sound and digital video. "This Binary Universe" isn't exactly an album and it isn't exactly a motion picture. It's a new form of digital art.

"This Binary Universe" is a collection of seven ethereal surround-sound tracks and seven animated shorts woven together into a dazzling audiovisual display. "I didn't really have a map for this", says BT. "And it was one of the most difficult things I've done in my life". He worked with animators and directors across the globe to produce the final DVD/audio CD combo. Everyone involved in the project — more than a dozen artists altogether — crafted their sequences with Apple hardware and software.

### Sonic Stillness

BT's binary universe didn't start with a big bang. It started with a lullaby. "The first piece I wrote was Dynamic Symmetry", he says. "It starts with something that's almost a lullaby thrown over a clicky hip-hop beat, then moves into a crazy time signature and then this jazz groove. At that point I wasn't planning on making a record, but it turned out so well that I decided to go for it".

BT reached for the same sonic stillness that saturated his first albums, "Ima" and "ESCM", ditching the dance beats that fuelled his pop chart ascent. The result is exacting and technical, yet emotionally charged. It's the kind of music that feeds both halves of your brain, challenges the logical and titillates the emotional.

"This Binary Universe" is a full-circle return to BT's early influences. The tracks were composed in the

As the tracks coalesced, a concept emerged. "I've been scoring a lot of films and so the tracks had a cinematic feel", says BT, who scored such films as "Go", "Under Suspicion", "The Fast and the Furious" and "Monster". He would add visuals and even story lines to further submerge his audience. He would create something more than just another album. But to do it, he'd need help.

### Visual Symmetry

In 2005, visual effects artist Scott Pagano received an MP3 and brief instructions: "Follow your inspiration". "I was given that MP3 and told to run with it", he says. "It was pretty amazing. The music had a cinematic arch, which brought me into directing a short film that really isn't like most music videos". BT had put out a call to visual artists — he was building a binary universe. The message flew through BT's personal networks and even appeared on Craigslist.

"A year and a half ago I just put it out there", says BT. "I was so blessed to find these artists and directors who listened to this music and said: 'I will do anything to be involved with this'. They believed in it so much that they came to the table with the most amazing stuff".

He gathered a diverse collection of artists that included a team of French filmmakers, a star visual arts student and major motion picture effects artists. Pagano had shaped, among other things, visual effects and bleeding-edge visual projects for electronic music producers like Funkstorung, Twerk, Richard Devine, Christopher Willits, Monolake, Deadbeat, Speedy J, Chris Liebing, Kid606, Joan Jeanrenaud and the Kronos Quartet. He was given two tracks to play with: "1.681" and "The Anhtkythera Mechanism".

"I was given both tracks and few key words, a few key elements", says Pagano. "We had this idea that 'The Anhtkythera Mechanism' was an ancient piece of technology. The story is about what happens

## Gallery



## On iTunes

Sample and purchase BT titles at the iTunes Store.

## Bending Circuits

You won't find a Barbie guitar in many pro studios, but you'll find one in BT's audio laboratory. "It doesn't sound like a Barbie guitar anymore, though", says BT. What was once a tiny pink toy guitar is now a seriously "bent" bit of circuitry crammed into a custom case bedecked with knobs and faders. "In circuit-bending you basically disassemble something that has exposed chips and tap through the circuit with a wire until the thing freaks out. Then you put in a switch to trigger the spasm or resistors to limit the range or a knob to adjust intensity. You do that a couple dozen times to a circuit and it just goes completely spastic". Circuit-bent instruments, including a tweaked toy megaphone attached to a modified dulcimer, feature prominently on "This Binary Universe".

classical three-part form: a statement of the theme, a variation of the theme and a recapitulation of the theme. It's a natural compositional form for the musician — he was trained as classical pianist and studied music theory throughout his formative years.

He also drew on some cutting-edge technology, composing with surround sound in Logic Pro. "It's such an incredible environment to write in", he says. "It's the sort of thing that my heroes — Penderecki, Stravinsky, Stockhausen or John Cage — would write in today. You're able to submerge the listener in a completely immersive sound field. It's just so attractive to me as a composer".

when people find it. I spent a week or two storyboarding it, sitting there with the track on loop for days, doing sketching and mock-ups in Photoshop".

## Sonik Architects

BT has created his own software company, Sonik Architects. The company will launch two programs in 2006: "Break Tweaker" and "Stutter Edit". "Break Tweaker includes a plethora of simple ways to deal with micro-note information", he says. "A lot of people who are doing this by hand are going to be blown away because it really simplifies the process". Stutter Edit will allow DJs and electronic music performers to replicate and modify the signature BT stutter effect live. Both programs will function within Logic Pro as AUs and Stutter Edit will be available as a VST plug-in.

## Aperture 3
Pro performance. iPhoto simplicity

## Final Cut Studio
Go beyond mere editing in a Final Cut world.

## Ready for Logic Studio?
Perform live, compose to video, and get even more instruments and effects.

## Mac Pro
The fastest, most powerful Mac ever.

Mac    Pro    Profiles    BT

| Macs | Accessories | Applications | Markets |
|---|---|---|---|
| MacBook Air | Magic Mouse | iLife | Creative Pro |
| MacBook Pro | Magic Trackpad | iWork | Education |
| Mac mini | Apple Wireless | Aperture | Students |
| Mac mini server | Keyboard | Final Cut Pro | Science |
| iMac | Thunderbolt | Motion | |
| Mac Pro | Display | Compressor | |
| | AirPort Express | Logic Pro | |
| **Considering a Mac** | AirPort Extreme | MainStage | |
| Why you'll love a Mac | Time Capsule | Remote Desktop | |
| Compare all Macs | | Safari | |
| FAQs | **OS X** | QuickTime | |
| Try a Mac | OS X Mountain Lion | Mac App Store | |
| | OS X Server | | |

Site Map | Hot News | RSS Feeds | Contact Us

[an error occurred while processing this directive]

# Pro

"Everything ends in Logic for me. I can structure Logic depending on what mood I'm in."

## BT: Binary Universe

"1.681", both sonically and visually, is based on the Golden Mean. Pagano wove a stunning 3D display using Final Cut Pro and Maya on a Mac. His workstation was coupled to a render farm and a terabyte Xserve RAID Fibre Channel network. The system gave him the ability to seamlessly knit complex 3D forms with the ancient mathematical theorem. "As an artist it's super critical that I have as few technical problems as possible", he says. "With the Mac and Xserve, I don't have to worry about crashes. With the Fibre Channel and Xserve RAID I can stop thinking about storage — I don't have to worry about having enough space or reading the files fast enough. It's all transparent".

Using Final Cut Pro, Pagano was able to interlace animation from Maya and footage from a Panasonic HD cam to create opening and ending sequences for "1.618" and "The Anhtkythera Mechanism". "It's a big deal to be able to work with lots of different media formats", he says. "Final Cut can work with anything — HD, DV, anything. It's completely resolution and codec independent. I wouldn't have been able to do what I did on this project without it".

### Maths in Motion

"1.618" is a harmonious synthesis of sound and sight, visuals painstakingly coordinated with every beat and riff. Every track on the DVD is similarly synced. "We spent hours editing the footage frame by frame", says BT. "It's hyper-synchronized with the music. And it wasn't easy because the tracks have such clicky, glitchy rhythms. It was actually frustrating to me that we only had 30 frames a second to play with because things didn't always line up".

Laying glitchy rhythms over strange meters required some specialised software. So BT wrote his own drum machine in Csound. He called it "Break Tweaker". "I built Break Tweaker from the ground up to make the beats for the record", he says. "It's a stand-alone program, but it can be used as an AU with Logic. It has some of the most esoteric, crazy features that you've ever seen. You can throw thousandth and 24th notes around without having to do tons of tedious programming".

Not that BT minds tedious programming. In fact, he wrote "All That Makes Us Human Continues" entirely in Csound. "It took me six months, but I did it", he says. "There were no live instruments at all. The whole thing is straight from code". Analogue visuals simply wouldn't do for such a technical track. CalArts student Mondi programmed the corresponding visual sequence entirely in code as well.

The other six compositions on the album, however, were written and finished in Logic Pro. "Everything ends in Logic for me", says BT. "I can structure Logic depending on what mood I'm in. I have tons of different auto loads. I have one for sound design, one for writing beats". The producer also uses native Logic Pro instruments and effects to augment his tracks. "The instruments are so powerful and the effects are amazing. Sculpture is one of the coolest synths I've used in years. I've paid hundreds of pounds for plug-in compressors and spent thousands on outboard compressors and the Logic compressor sounds better than all of them".

### Portable Universe

BT plans to take his universe on the road. "I think that there's a large demographic of people who are really interested in cutting-edge art and bleeding-edge electronic music", he says. "The live shows will be a meeting place for both". He plans to set up surround-sound rigs in galleries, concert halls and churches. Beginning in September, "This Binary Universe" will go live. "I'm going to mix the music live with Logic and we'll have someone to do live visuals during the performances. We're all just going

### Under Surveillance

BT still scores. His latest soundtrack compositions were for a film tentatively titled "Look". "It was all shot on video surveillance cameras", says BT. "My idea for the film was to take the background sound of life and quantize it. On one track I used the buzz of neon light bulbs and the drone of refrigerators and air conditioners. At one point I was in Mexico with a portable 24-bit recorder holding up a mic to the ventilation system in a parking garage because it had such a clear ring to it. The main theme is composed with that sample, a cash machine, a bar code scanner and a dot-matrix printer".

### Sound Keys

Syncing video to hyperactive electronic beats isn't easy. That's why Pagano uses Trapcode Sound Keys, a plug-in for Adobe After Effects. "You feed in an audio file and it splits it up into frequency bands", he says. "Then you can isolate certain parts of the track and set key frames to them". Pagano is currently working on another ultra-synchronized electronica project for German DJ Speedy J. "My new work takes audio-visual synchronization a lot further", he says. "I'm working on an hour-long DVD project, an abstract graphic film set to Speedy J's music. BT's music is really cinematic and lends itself to a more narrative exploration. This is much more abstract, in terms of sonic timbre and landscape. It pushes the idea of micro-bits of sound moving the imagery a lot further".

### Equipment List

**BT**
Power Mac G5
Logic Pro
Break Tweaker
Stutter Edit

**Scott Pagano**
Power Mac G5
PowerBook G4
23-inch Apple Cinema Display
Xserve RAID
Xsan
Final Cut Pro
Logic Pro
Shake

**Other Plug-ins and Software**
Native Instruments Reaktor 5
Native Instruments Absynth 3
Native Instruments Guitar Rig 2
Native Instruments Spektral Delay
Camel Audio Camelon 5000
Camel Audio CamelPhat
Camel Audio CamelSpace
iZotope Trash
iZotope Ozone
iZotope Spectron
KeyToSound iNet synth
Synthology Ivory
Ultimate Sound Bank UltraFocus

to jam together. No two shows will be alike".

"This Binary Universe" straddles genres. It's orchestral and electronic, classical and eclectic. And above all, it mixes digital mediums in a way that few mass-market releases have. "It goes contrary to so much of what is happening in many other idioms of music", says BT. "The experience of listening to music has become so much more peripheral. This is about being present with the music — this is intended to be an experience".

Blackmagic Design DeckLink
Panasonic HVX-200 DVCPRO HD camera
Canon EOS-20D
Wacom intuos3
Autodesk Maya
Adobe After Effects
Adobe Photoshop
Trapcode Sound Keys
RE:Vision Twixtor
RE:Vision ReelSmart Motion Blur

Csound
Soundhack
Kyma X
BIAS Peak Pro 5

**Other Gear**
MOTU HD192
M-Audio Axiom
M-Audio BX-5a (5.1 set-up with BX-10s sub)
M-Audio Trigger-Finger

**Hardware Synths**
Roland Jupiter 8
Arp Omni II
Cwejman S1
Oberheim 4-voice
Sequential

That was due, in part, to challenging time signatures. "Typically when I'm working on music, even for a score, I'm writing in 4/4", says BT. "For this project, I wanted to experiment with asymmetrical meter. If I wrote something in 9/4, 7/8 or 13/8 — whatever kind of crazy signature I wanted — I kept it".

**Aperture 3**
Pro performance. iPhoto simplicity

**Final Cut Studio**
Go beyond mere editing in a Final Cut world.

**Ready for Logic Studio?**
Perform live, compose to video, and get even more instruments and effects.

**Mac Pro**
The fastest, most powerful Mac ever.

Mac    Pro    Profiles    BT

**Macs**
MacBook Air
MacBook Pro
Mac mini
Mac mini server
iMac
Mac Pro

**Considering a Mac**
Why you'll love a Mac
Compare all Macs
FAQs
Try a Mac

**Accessories**
Magic Mouse
Magic Trackpad
Apple Wireless
Keyboard
Thunderbolt
Display
AirPort Express
AirPort Extreme
Time Capsule

**OS X**
OS X Mountain Lion
OS X Server

**Applications**
iLife
iWork
Aperture
Final Cut Pro
Motion
Compressor
Logic Pro
MainStage
Remote Desktop
Safari
QuickTime
Mac App Store

**Markets**
Creative Pro
Education
Students
Science

[an error occurred while processing this directive]