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After a few years away from releasing new sample libraries, Dan Dean has returned with a brand-new piano library, developed in collaboration with sound architect Ernest Cholakis, that offers an unprecedented level of tonal control.

Mark Wherry

Just what the world needs, you might be thinking... Another sampled piano! And, to be fair, since the release of Steinberg's The Grand back in 2001 there has been no shortage of extensively-sampled virtual piano instruments to complement the already vast collection of piano sample libraries in

Blüthner Digital Model One Sample Library

existence. However, as a pianist, I have to confess that I've yet to find an acoustic piano virtual instrument that I really like. For me, some virtual pianos just sound bad, some feel bad, and some, well, feel and sound terrible. So I'm always curious to try a new virtual piano instrument in the hope that I'll find something I really like. I should mention, before continuing, that my vantage point is that of a classical pianist, so my comments reflect this perspective.

Deep Blüthner

Rather than sampling yet another Steinway or Bösendorfer piano, Dan Dean and Ernest Cholakis have instead opted for a Blüthner Model One, and the Digital Model One is actually an officially licensed product of the Blüthner company. Although the Blüthner name is perhaps not so well known as Steinway or Bösendorfer these days, the company was founded in Leipzig, Germany in



The Digital Model One's Kontakt 2-based interface allows easy access to all of the parameters of the instrument.

1853 (the same year that Steinway & Sons was founded in New York) and their pianos have attracted a long list of high-profile admirers, including Arthur Rubinstein, the Beatles, Rachmaninov and Queen Victoria.

To create the Digital Model One, Ernest and Dan recorded Blüthner's flagship Model One grand piano at the scoring stage of Lucasfilm's Skywalker Sound facility, using "hand selected and modified" microphones, Grace Design preamps and Pacific Microsonic's HDCD A-D converters, which many engineers consider to be the finest A-D converters ever released. The samples were recorded in stereo, and there are 24 velocity layers in total for each of the 88 notes on the piano: 12 with the sustain pedal up and 12 with it down.

The Digital Model One is a Kontakt 2-based instrument and comes supplied with Native Instruments' Kontakt 2 Player, which runs either as a stand-alone application or as a plug-in within compatible VST, Audio Units or RTAS hosts. The minimum requirements quoted are quite low: a 1.8GHz G4 or G5 processor, or a 2.8GHz Pentium 4/Athlon; 1GB memory; and Mac OS 10.4 or Windows XP. You'll also need just over 4GB of hard disk

space to install the instrument, and it takes a few moments for the sound data to be copied to your system. Once the installation has been completed, you'll need to undertake the relatively painless authorisation process via Native Instruments' Service Center application, and this needs to be done before you can start playing the Digital Model One.

Blüthner Dynamics

Once you get the Digital Model One up and running, selecting an instrument to load throws up quite a number of options. To begin with, the instrument list is divided into two groups: Regular and Variable Sustain Pedal. The Regular Sustain Pedal instruments are programmed to be used with a normal sustain pedal switch, where the pedal is either down (on) or up (off). The Variable Sustain Pedal instruments, however, allow for more realistic pedalling by supporting a variable sustain pedal (see 'The Variable Sustain Pedal' box) where there are 126 values between fully down and fully up. Although the effect of using the Variable Sustain Pedal instruments can be quite subtle, it does add a surprising amount of realism to both the sound and the playing experience.

Whether you opt for using the Regular or Variable Sustain Pedal instruments, each group offers the same list of 42 instruments, where there are seven different types of timbre to choose from (Classical, Custom,

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Blüthner Digital Model One

\$299

pros

- The Blüthner Digital Model One's sound has been beautifully captured, with a high level of detail, particularly in the upper register.
- Thanks to the dynamic scaling features, the Digital Model One is one of the most natural-feeling sampled pianos to play.
- The use of impulse responses gives you comprehensive control of the tone and space.

cons

- None, although more meaningful names or musical descriptions of the reverb impulses would be helpful.

summary

With its playable, detailed and adjustable sound, Digital Model One is quite possibly the finest virtual piano instrument available.

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BLÜTHNER DIGITAL MODEL ONE

► Jazz, Pianos, Pop, R&B, Vocal), and six different dynamic scaling percentages (45, 55, 65, 75, 85 and 100). The dynamic scaling percentage describes how the Blüthner's dynamic response will be mapped to MIDI velocities: 100 percent means that the instrument will match the dynamic response of a real Model One, and the other percentages reflect a compression of that dynamic range.



that will work best with the weighting of your keyboard controller.

The dynamic scaling is an impressive feature of the Digital Model One, and although you only get six choices, the results are so much more natural than you would achieve by trying to shape a velocity curve manually. In fact, when I started to play the Digital Model One I almost forgot that I was sitting in front of an electronic instrument

because the dynamics seemed so much more intuitive than with other sampled instruments, although I think you'll need to have a good weighted keyboard to be able to take full advantage of this.

Playing On An Impulse

The most important aspect of the sound of the Digital Model One is that it was recorded to be completely dry, with microphones positioned in close proximity to the instrument. The recordings were later processed with a special system developed by Ernest that apparently "reduces noise to levels unattainable in the real, physical world", and the manual claims that the Digital Model One has the "lowest noise floor ever achieved in a sampled piano." I didn't have a chance to quantify the validity of this claim, but certainly the piano does sound incredibly clean, and the clarity of the tone is especially

impressive, particularly in the treble register of the piano, where the Blüthner Model One has a fourth sympathetic string that enhances the resonance (most pianos have three strings in this register).

The dry nature of the recordings means that the Digital Model One sounds a little clinical by default, and playing the piano without any ambience is ultimately a bit unsatisfying. However, the reason for recording the Blüthner in such a controlled manner is not because Dan and Ernest intend for you to play it this way. The reason for providing such dry samples is to give you the flexibility to shape and enhance the sound as required, using Kontakt 2's convolution filter in conjunction with a set of specially recorded impulse responses supplied as part of the Digital Model One instrument.

There are three different types of impulse responses you can use simultaneously: Timbral Impulses, to shape the actual tone of the instrument; Reverb Impulses, to add space and depth to the sound; and Sustain Impulses, to enhance the realism of the samples recorded with the sustain pedal down. All of the impulse types are bypassed by default when you load an instrument from the Digital Model One library, and each impulse type has its own pop-up menu for you to choose alternative impulse responses.

The Reverb Impulses are perhaps the most vital, as they provide a space in which to perform with the Digital Model One, although you could equally keep the Blüthner dry and add your own reverb into the signal chain if you're using the Kontakt 2 Player with a host that supports other effects plug-ins. However, the impulse responses for reverb supplied with the Digital Model One are of a very high standard, as you would expect from sound architect Ernest Cholakis, and really bring the instrument to life. There are 18 different spaces in total, labelled from 'A' to 'T' (there's no 'I' or 'O', in case you were wondering why that figure isn't 20!) and each space has four variations: Crisp, Clear, Warm and Dark.

My only small criticism of the reverb impulse responses is the naming, because while the manual tells you that the impulses capture spaces like small rooms and concert halls, each Reverb Impulse is labelled something like 'R70 RevT Clear'. This could be fine if the manual gave a more meaningful description for the space behind each letter, but it doesn't, so although 'A' seems to be the smallest space and 'T' the largest, you'll still need to go through them once and make some notes in order to choose the most appropriate impulse for a particular purpose.

In addition to being able to select different Reverb Impulses, you can also set the amounts of dry and wet signal that will be output, along with a pre-delay setting to delay

Ernest and Dan were able to capture and recreate the real dynamic response of the Model One by using a proprietary technique they refer to as 'Linear db Scaling'. Rather than applying simple volume curves to shape the dynamics of each velocity layer, as is often the case with sampled instruments, the manual claims that "each individual sample has its own calibrated dynamic level derived from the actual acoustics of the Blüthner Model One."

What this means is that if you choose an instrument with 100 percent dynamic scaling, the response will be exactly like a Model One, with the weighting being slightly heavier, so you'll need a little extra strength to play fortissimo. With 45 percent dynamic scaling, the response is extremely light and very little pressure is required to play loudly. The percentages in between give you the flexibility of choosing the dynamic response

Just Intonation: Alternative Tuning

Like most sampled instruments, and, of course, real keyboard instruments, Digital Model One uses the equal temperament tuning system by default, where an octave is divided into 12 equal frequency ratios. What this division doesn't take into account, though, is that the same notes will have different harmonic properties depending on their roles within different scales; so a G in a C-major scale, for example, is not the same frequency as a G in an E-minor scale. A tuning system that does take this difference into account is known as 'just intonation'; but the problem with just intonation is that it requires each note to be tuned differently depending on the musical scale.

As you can imagine, retuning every note depending on what key the music you're playing is written in would be something of a pain with a real piano — forget key changes. So the reason why equal temperament has become the common tuning system is because although dividing each octave into 12 equal ratios results in harmonic errors, those errors are spread evenly across the octave, allowing you to play (approximately) in

any key without having to retune the instrument.

However, the physical limitations of tuning systems don't exist for electronic instruments, so the Digital Model One makes it possible to disable equal temperament and use just intonation instead. In order to select the key to use for just intonation you can use keyswitches that are programmed below the piano's lowest A, or MIDI controller 16.

The sound of just intonation takes a moment to get used to; once you remove the harmonic errors, the purer, smoother tuning gives the impression that there's something missing when playing chords. I found that the sound does become slightly darker, possibly as a by-product of the pitch interpolation algorithm in Kontakt 2. However, Kontakt Player 2 only allows you to change the interpolation algorithm used for offline processing, not real-time playback, so there's no way to adjust this.

The just intonation feature is interesting to experiment with, and amusing if you choose a just intonation key that has nothing to do with the key in which you're actually playing!

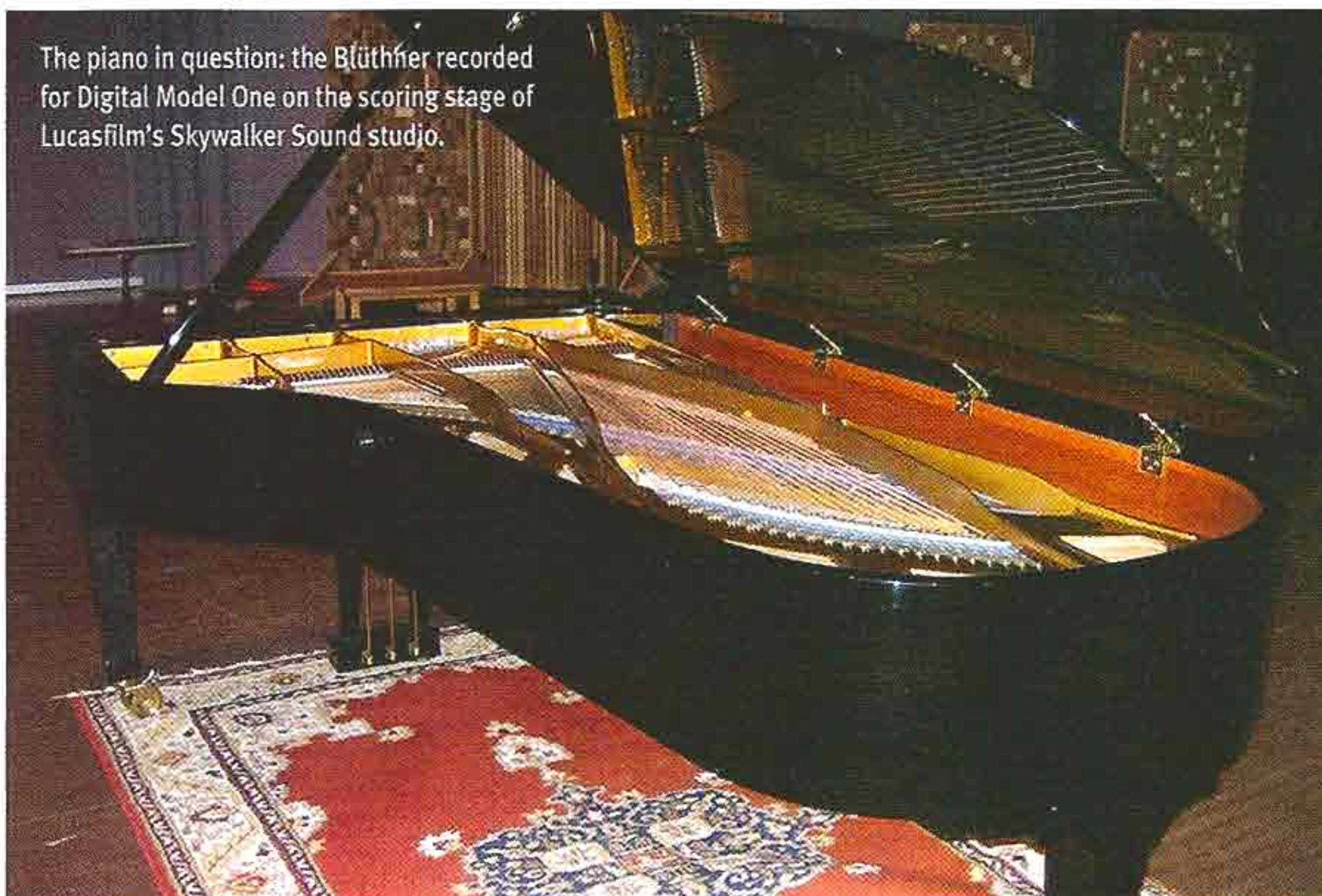
BLÜTHNER DIGITAL MODEL ONE

► the dry signal being sent through the reverb convolution filter between zero and 300ms.

The Timbral Impulses provide a feature not usually found on sampled piano instruments, allowing you to shape the sound of the source recordings and transform the timbre of a Blüthner Model One into that of another piano. Earlier in the review I mentioned that when you select an instrument to load you can choose from seven different types of timbre, and the timbre choice you make when you load an instrument dictates the set of Timbral Impulses that will be available with that particular instrument. For example, selecting an instrument containing the word 'Classical' in the filename will load the Digital Model One instrument with the Classical group of Timbral Impulses available.

As I've already mentioned, the basic tone of the Digital Model One is quite impressive, and while I was perhaps a little sceptical of the usefulness of the Timbral Impulses at first, this soon passed once I disabled the Bypass button for the Timbral Impulses convolution filter. Instantly the tone across the whole piano was transformed, and, depending on the set of Timbral Impulses used, the change in tone ranged from subtle to incredibly dramatic. For example, with the Classical Timbral Responses there are many impulses to smooth the brilliant edge of the tone in a more natural way than simply using a low-pass filter; while the Pop Timbral Responses allow you to thin out and sharpen the tone a bit, to better cut through in a mix.

These descriptions of the Timbral Responses are a little broad because each Timbral Impulse is an impulse response of an actual piano. The manual is quite helpful in providing some descriptions of the pianos used for the impulses, although the naming is kept deliberately generic for pianos other than those manufactured by Blüthner. A nice touch



The piano in question: the Blüthner recorded for Digital Model One on the scoring stage of Lucasfilm's Skywalker Sound studio.

The Variable Sustain Pedal

To make use of the Variable Sustain Pedal instruments in Digital Model One you'll need to have a sustain/damper pedal that's capable of sending MIDI sustain messages (controller 64) with continuous values between zero and 127.

The only problem here is that most controller keyboards and digital pianos only support a switch for the sustain pedal, which sends either a value of zero or a value of 127, depending on whether the pedal is depressed or not. However, if your keyboard supports an expression pedal it's possible to use this instead, and many keyboards offer the option of choosing which MIDI controller the expression pedal sends. If you can't do this from your keyboard, most sequencers will enable you to easily transform expression messages (controller 11) to sustain messages before they reach the Kontakt 2 Player plug-in. In Logic you can do this via an Environment Transform object,

for example, whereas in Cubase you can do it by inserting an instance of the Transformer MIDI plug-in.

The next problem, however, is the pedal itself, because although continuous pedals do exist, most of them are designed like an organ swell pedal, where your foot changes the angle of the pedal. This is fine for expression, but quite unnatural as a replacement sustain pedal. Fortunately, though, there are a few piano-style sustain pedals that can send continuous values, and personally I use a Roland DP8 for this task; you should be able to find one of these at a music shop for around \$30. And in order to better match the response of the sustain pedal to what I would hear in Digital Model One, I used Logic's Transform object to map the incoming values from the DP8 to more suitable outgoing values for Digital Model One.

in the user interface is a display of eight frequency bands that gives a graphical overview of the current Timbral Response's characteristics, so at least you can see a basic overview to identify with what you're hearing.

The library of Timbral Responses included with Digital Model One is vast and covers a whole spectrum of grand pianos of varying sizes, upright pianos, and even other digital and sampled pianos. If Dan and Ernest provided just their original source samples in the Digital Model One, it would already have been a great instrument, but the flexibility and tonal possibilities you can get from using the Timbral Responses is tremendous and really adds another dimension to the sound.

Kind Of Blüthner

The care and attention that has gone into creating the Blüthner Digital Model One is quite staggering, and you really get a sense of this when reading the informative manual, browsing the product's web site

(www.proaudiovault.com) or, of course, simply playing the instrument. Just when you think you've figured out all the possibilities, you encounter a detail in the manual that reveals another subtle control for extracting even more realism. And in addition to the features mentioned in the main part of the review, there's also a chorus effect, plus independent controls for setting the release trigger length for notes that are played with the pedal up or down — you can even adjust the release trigger length separately for notes that were triggered before the sustain pedal was held.

The market for virtual piano instruments is quite competitive these days, and while the Digital Model One might seem a little expensive at first, it's in a similar price range to Synthology's Ivory or Native Instruments' Akoustic Piano, despite the fact that with these products you do admittedly get three or four different types of pianos, rather than one. However, for me, none of the pianos provided in these packages are equivalent in quality or offer anywhere near the level of tonal control that you get with the Digital Model One.

In conclusion, despite all of the amazing possibilities and features offered by the Digital Model One, what makes it successful, in my opinion, is that Dan and Ernest have got the two most important and basic qualities an instrument should possess absolutely perfect: the sound is fabulous and the Digital Model One is a complete joy to play. I was thinking about using a cake analogy to describe the impulse responses as well-crafted icing on top of a deliciously baked cake, but that just seems unnecessary! **SOS**

information

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