



Review: Garritan Gofriller Solo Cello
Created by Giorgio Tommasini, Stefano Lucato & Gary Garritan
by Rick Paul - 19th May 2007 -



Back in March of 2006 I had the pleasure of reviewing the [Garritan Stradivari Solo Violin \(GSSV\)](#). GSSV represented a real breakthrough in acoustic instrument emulation, raising the bar in the realism, expressiveness, and, especially, real-time playability that could be achieved with a sample-based software instrument. Just before the review was published, Gary Garritan provided information on some further developments based on the same technology, including a version 2.0 update to GSSV ([see below](#)) and some future products. The latter caused me to include the following teaser at the end of my review:

Garritan also indicated plans to release additional stringed instruments based on the same technology as used in GSSV.

Well, it took quite a bit more than a month of two -- in fact, almost exactly a year -- but the Garritan Gofriller Solo Cello (GGSC) shipped in March of this year. Does the GGSC live up to the high standards set by GSSV? Was the wait worth it? Let's take a look.

Background



The Garritan Gofriller Solo Cello was developed by the same team that produced the Garritan Stradivari Solo Violin. That effort was a collaboration between an Italian team and Gary Garritan, who supplied the Gofriller samples. Besides Garritan, the founders of the team included Giorgio Tommasini, who developed the patent-pending phase alignment and other techniques underlying GSSV, and Stefano Lucato, a professional musician and sound engineer.

Like GSSV, GGSC relies on Native Instruments' KONTAKT 2 sampler technology for its underlying sampling engine. Unlike the original GSSV, GGSC bundles a KONTAKT 2 Player, so users will not be faced with separately needing to purchase the KONTAKT 2 sampler. (GSSV 2.0 also includes the KONTAKT 2 Player, which was not available at the time the original GSSV was released.)

GGSC runs on PCs with Windows XP and Macs with OS X. A standalone player is provided, in addition to most common plug-in formats (DXi, VST, and RTAS on Windows; Audio Units, VST, and RTAS on Mac), Garritan lists the following requirements for GGSC:

- CD or DVD drive
- 1 GB of available disk space

- 1 GB or more of RAM
- Windows XP, Pentium 4/Athlon, 2.6+ GHz or faster recommended
- Mac OS X 10.4 or higher, G4 1.5 GHz is minimum, but a G5 or Mac Intel is recommended
- Low latency sound card with ASIO drivers and compatible with KONTAKT 2
- MIDI interface (if using a MIDI keyboard that connects to the computer via MIDI rather than USB)
- MIDI keyboard with at least five, preferably six or more, octaves, and the following controllers:
 - Pitch Wheel
 - Mod Wheel
 - Sustain Pedal
 - Channel Aftertouch
 - Expression Pedal

The product package includes a CD with the KONTAKT 2 Player, including the new NI Service Center (see below), a single KONTAKT 2 format instrument, and PDF versions of the user manual and release notes. There is also a 59(!)-page paper manual. As with GSSV, the GGSC manual is extremely thorough. It includes the technical information needed to play the instrument, such as controller uses, as well as a wealth of information on cello playing terms and techniques, including how to achieve them with GGSC. There are also history lessons on Mateo Gofriller and his instruments, information on the philosophy behind GGSC, brief biographies on the key developers of the product, and much more.



A big part of the overall value of GGSC is Garritan's excellent support. GGSC shares support forums with GSSV, and there is regular participation from the developers of the products, as well as users of all levels of experience. It is generally worth taking a look at the forums prior to installing the software in case there are any common issues that you may be able to avoid with a little forewarning.

Installation of the product is straightforward. However, if you have multiple KONTAKT 2 Player-based instruments, beware that the different vintages of players installed with each instrument can cause issues with other instruments. I have four separate KONTAKT 2 Player-based instruments on my system: GSSV 2.0, GGSC, the latest update to GPO, and Chris Hein Guitars. Somewhere in the course of installing these products, all within relatively close proximity to each other, I ended up with error messages indicating the version of the KONTAKT 2 Player was too old to load some of the specific instruments. In particular, trying to load GGSC and the updated GPO got these messages. This stemmed from the installation of multiple KONTAKT 2 Players in different directories. For some reason, SONAR (V6.2.1) did not put all of them in its VST menus, and the ones it did put in there were older than the two products that encountered problems. While I'm still not clear on why SONAR didn't load all the instances in its menus, or what really should have happened in terms of updating of players, the fix was to identify the newest player, and install that centrally for use by all four of the software packages. Once I did this, it was able to load all four of the instruments just fine.

GGSC includes the NI Service Center application, which is NI's new method for dealing with software authorizations and updates. It streamlines the user interface for authorizing software in the first place. If you've already registered at least one product, registration of a second product is as painless as telling it to go ahead and register the new product. It already knows what product needs to be registered and can provide the needed data for the registration. Similarly, checking it every once in awhile can let you know if updates for any of your NI products are available, including KONTAKT 2 Players specific to any third party instruments such as GGSC. One minor wrinkle is the NI Service Center seems to insist on installing itself with each new instrument you install, even if it is an older version than the one you already have installed. Of course, the first thing it then wants to do after being installed is update itself to the newer version that had, in all likelihood, just been replaced.

GGSC lists for \$199, and street prices seem to be identical. All testing for this review was carried out with V3.02 of the Gofriller Cello library under SONAR Producer Edition 6.2.1. The VST version of the KONTAKT 2 Player was used.

Technology Refresher

If you would like to know more detail about the technology underlying GGSC, I recommend reading my earlier [review of GSSV](#). The underlying technology is largely identical, so I will only summarize the technology to avoid redundancy with the detailed explanations in the GSSV review.

The GGSC documentation states the goal of the development team as having been to provide the highest quality and most comprehensive solo cello library -- one that is extremely thorough, realistic, and playable. It further lists the eight main objectives in service of that goal as being:

1. Implementation on a conventional sampler
2. Real time playability
3. Real time, continuous transition (morphing) across several dynamics of the same note
4. Real time, continuous transition between vibrato levels
5. Real time control of the vibrato intensity & rate
6. Real time portamento & legato
7. Real time shaping of most articulations
8. Timbral characteristics indistinguishable from the original samples

At the architectural level, GGSC employs the same techniques as GSSV to address these objectives. In particular, it builds upon the KONTAKT 2 sampling engine, script processor, and convolution effect as follows:

- Pre-processed samples, which are phase aligned for each harmonic by the sample library development team, are used to allow crossfading without artifacts.
- A specially constructed impulse response, derived from in-depth analysis of the sounds produced by the instrument (not just its body characteristics), is used to recreate realistic vibrato and portamento from non-vibrato sounds.
- A MIDI processing script analyzes what the player is doing (e.g. with respect to note overlap, timing, etc.), and translates this into a sophisticated series of commands to the sampler to emulate cello techniques.

New Features

GGSC introduces a number of enhancements over GSSV. For starters, it includes four instrument body impulse responses, instead of one, to provide different colors of the same instrument. These new "dimensionless space" impulses, as Garritan calls them, are designed to create a space effect, but without giving the impression of finite dimensions as a typical room simulation impulse response might. This makes it easy to use these impulse responses in conjunction with traditional or convolution-based reverbs to place GGSC in your "room" of choice.

On the playing front, there is a new retriggering mode. The way this works is, when you hold one note down while playing a second note, then release that second note, the first note is retriggered. If you consider the way a real cello player might play a trill, holding one finger down on the string at the position that corresponds to the lower note, while rapidly moving another finger on and off the string at the position that corresponds to the higher note, you will note that this technique comes pretty close. The main difference is that, with GGSC, you can also hold down the higher note while moving your finger on and off the lower note. A similar technique can also be used for playing rapid turns around a central note, for example by holding the playing the central note and holding it down, then playing the higher note and releasing it, then playing the lower note and releasing it. What the listener hears is the central note followed by the higher note, the central note again, the lower note, and finally the central note once more.

Cellists can play some of the notes on their instrument on more than one string. For example, a lower position on a higher string may result in the same note as a higher position on a lower string. In its default mode, GGSC chooses the highest string able to play a given note. However, GGSC also introduces *sull'altra corda* mode, invoked via a

keyswitch, in which lower strings are used to play notes for which samples on multiple strings are available. This achieves a different, generally warmer, tone.

Another new technique available in GGSC is bichord portamento. In real life, this would occur when a player holds down two notes on two strings, then slides his or her fingers, while continuing to play the notes, to different positions, effecting a slide between both notes to the new notes. That is, the player is sliding from one two-note chord to another. The difficulty of implementing this technique on a keyboard is determining which note slides to which new note, and the GGSC development team has used artificial intelligence techniques to determine the shortest path for making the slides. From the GGSC player's perspective, it is simply necessary to hold down two notes (which were played together), and keep them held down, then play two different notes together and release the first two notes. Alternately, the sustain pedal can be used to allow releasing the first two notes while playing the second two notes.

GGSC also adds independent control of the level of bow noise. A real cello player has a good deal of control over the amount of bow noise that is heard. Various factors, including playing techniques (e.g. bowing angle and pressure), the construction and composition of the bow itself, and the amount of resin used, affect the level of bow noise. GGSC has added a MIDI continuous controller definition (CC#15) to provide automatable, continuous control over bow noise. Alternately, a knob in the KONTAKT 2 Player's interface can be used to set the level of bow noise to a custom level in "set and forget" fashion.

Finally, GGSC introduces a user-controlled randomization of the vibrato rate. While the user can already control vibrato rate directly via aftertouch, not all keyboards make it easy to have nuanced control in this area. Since real players rarely keep vibrato rate constant, some amount of randomization of the vibrato rate may be useful to help achieve more realistic vibrato effects. To this end, GGSC provides a knob in the KONTAKT 2 Player to set the level of vibrato randomization, with 101 steps from no variation at all on the low end (i.e. with the knob at the zero position), to "marked variation" (i.e. with the knob at the 100 position).

Playing Around

I was very eager to get my hands on GGSC as I'd had a number of songs where I wanted to use violin and cello in relatively exposed contexts within pop songs. GSSV had spoiled me with respect to the order of magnitude of improvement available over other software instruments I might have used for such projects in the past (e.g. GPO would likely have been my default for both sounds prior to GSSV). Thus, I was looking forward to the possibility of having a similarly capable cello.

When I initially started using GSSV, I had a way underpowered computer (Athlon XP 1600+), and SONAR 5 and 6 generally would not let me reliably record multiple MIDI continuous controllers in parallel. Thus, other than for occasional experimentation, I got used to recording GSSV parts in multiple passes, a controller at a time, or sometimes even drawing in CC parts in SONAR's Piano Roll View. Prior to getting GGSC, however, I upgraded to a relatively state-of-the-art system (Core 2 Duo EE6600). No longer was the system a limitation for recording multiple continuous controllers. However, I hadn't yet acquired an expression pedal, which is necessary for playing GSSV or GGSC as you run out of independently controllable fingers (i.e. to try to substitute faders for the mod wheel and expression pedal) when you're also playing notes with one hand.

Thus, the first thing I did after getting GGSC up and running was run out to my local music chain store and pick up an expression pedal. I won't name names, but the one they sold me was cheap, both in price and construction, and flat out didn't work within less than a day (it was highly questionable at the start, too). I went back a few days later to return that one and see what else they had. It turned out they only had one other type, a Roland EV-5. While I wouldn't exactly call it built like a tank, it was much more solidly constructed, and seems to generally do the trick, albeit not achieving terribly fine granularity in the values it sends (or SONAR receives and records). Why do I mention this? One of the facts of life regarding software instruments is that the degree of fine control you have over the musicality of the results is left in the hands of your MIDI controller hardware, not the software itself. I found playing GGSC to be much more pleasurable with an expression controller. However, the characteristics of my particular combination of expression pedal, keyboard controller (an Alesis QuadraSynth Plus Piano), MIDI interface

(E-MU 1820M), and DAW (SONAR Producer Edition 6.2.1), along with my own playing technique, sometimes made for some overly coarse dynamics. In at least one case I ended up removing all the expression pedal events (CC#11) I'd recorded, then overdubbing them using a graphic slider in SONAR's Track Inspector instead.

Hardware limitations aside, I found GGSC quite pleasurable to play, perhaps even moreso than GSSV. It is a very expressive instrument. Though there is some learning curve to get control over the various nuances of playing it, just like with any real life instrument, there was also a significant degree of instant gratification. To put it another way, even without having gotten into any of the finer points or advanced techniques, GGSC gave me better, more realistic results than I'd have been able to obtain with any of the other cello sounds I've used in the past. Not being a string player myself, it will take me some time to come to grips with all the nuances available in GGSC. However, that is where the GGSC user manual shines. It not only explains what the techniques are, in terms of in the context of use by real string players, but also provides step-by-step examples of how to implement them on GGSC. In a sense, it is like getting a lesson book included with the user manual, though you're on your own in terms of finding appropriate musical contexts.

If you'd like to hear a real life example of my hands-on use of GGSC, you can listen to ["Elizabeth, Lately"](#) (words and music by Michael J. Parker and Rick Paul, © 2007 Michael J. Parker-BMI/Closet Cowboy Music-ASCAP). It is using both GGSC and GSSV 2.0. The parts were initially played live, but I ended up replacing both the expression pedal and mod wheel data via overdubs for finer control. In the case of the mod wheel, I simply overdubbed using the mod wheel on my keyboard. However, in the case of the expression pedal, I overdubbed the data using SONAR's envelope automation due to the expression pedal considerations mentioned above. I might add that this performance simply used the default mode of GGSC, which analyzes playing techniques to determine whether and how to use portamento, whether to use monophonic or polyphonic mode, whether to play staccato, legato, or somewhere in between, and so on.

I did initially encounter one significant, and frequent, reliability issue when using GGSC (and GSSV 2.0) with SONAR 6.2.1. I found SONAR was crashing frequently -- often multiple times per day. While the crashes occurred in a number of contexts, they seemed to happen considerably more frequently when GGSC and GSSV 2.0 were in use, especially if I was recording MIDI parts with either of those. In researching SONAR 6 crashes on the web, I found a number of users who had mentioned turning SONAR's multiprocessor mode off to get much better reliability. Though I was reluctant to give up MP mode use -- after all, that is one of the reasons I got a dual core system in the first place -- I was curious what it might do for my SONAR stability. While it hasn't gotten rid of all my SONAR 6 crashes, I have not had a crash with GGSC or GSSV 2.0 since turning off MP mode. While it is at least conceivable that this could be coincidental, given that I generally could not recreate these crashes on demand, I suspect it is not. My suspicion is there is some issue, be it in the KONTAKT 2 Player or the combination of the KONTAKT 2 Player and SONAR itself, or perhaps the combination of one or both of these with some third ingredient (e.g. my audio drivers), that is messing up in MP mode. Since SONAR is the application that actually does the crashing, I did report one of these crashes to Cakewalk, and supplied a minidump of the crash. I have not heard anything back from Cakewalk, even as to the cause of the crash, no less any potential solutions. At this point in time, however, keeping SONAR's MP mode turned off seems to be an effective workaround.

Closing Notes

When I first took on this review, I was somewhat concerned about what I'd be able to say about GGSC. Whereas GSSV was a revolutionary product, my initial impression was that GGSC was likely to be just like GSSV, only a cello instead of a violin. That, in and of itself, would have made GGSC an excellent product, but it wouldn't have made for a very interesting review.

I'm happy to report that GGSC brings more to the table than simply a cello version of GSSV. While the new capabilities GGSC brings to the table are evolutionary, rather than revolutionary, they do result in GGSC's being a significantly more capable instrument. Since GSSV is already no slouch in that department, that really is saying something.

Garritan Stradivari Solo Violin 2.0 Update



My [original Garritan Stradivari Solo Violin review](#) ended with some early information on a then-future update to GSSV. At the time the only information available was some preliminary pricing and that it would include the KONTAKT 2 Player and would support the same plug-in formats as KONTAKT 2 itself supported. The actual upgrade ended up making a number of additional enhancements, while delivering prices that were lower than predicted (\$199 list for the full GSSV 2.0 package and \$29.95 for the upgrade from GSSV 1.0).

Beyond the inclusion of the KONTAKT 2 Player, perhaps the most notable change is the inclusion of two separate instruments. The first is the V1.08 "Classic" instrument, which is functionally identical to the original GSSV instrument at its most advanced stage. The second is the V2.01 "Lyrical" instrument. It has a different color, which Garritan indicates may better suit "lyrical, more dramatic pieces." The developers have also done further work to improve both the consistency of the instrument's timbre from note to note and the overall quality of the timbre and vibrato of the instrument. These changes involved both smarter (i.e. in the sense of being savvy about issues in this area) sample processing algorithms and the development of new modal impulse responses.

New capabilities added to the V2.01 instrument include sustain pizzicato, new bow direction changing features, more natural linking of pitch to dynamic changes, and new "dimensionless space" body impulse responses. In the V1.08 instrument, pizzicato does not respond to the sustain pedal. In V2.01, pizzicato notes are held as long as the sustain pedal remains depressed. The V2.01 instrument also adds additional flexibility in controlling placement of bowing direction changes. In V1.08, bow change was activated by CC#64 (sustain pedal), and is audible only on repeated notes and at the end of each legato/portamento phrase (i.e. a run of overlapped notes in terms of the underlying MIDI data). In V2.01, the bowing direction change is still activated on repeated notes when CC#64 is held down, but overlapping notes yield legato/portamento only. To achieve a bowing direction change after a legato/portamento phrase, the user needs to quickly retrigger either the starting or ending note. This lets the user control whether or not bowing direction changes occur at the ends of the legato/portamento phrases, whereas there was no user control over this when CC#64 was depressed in V1.08. The V2.01 instrument also reacts to rapid changes of CC#11 (expression pedal) with subtle pitch shifts, similar to what would happen with a real violin when there is a sudden increase in string tension. The V2.01 instrument also adds new "dimensionless space" body impulses (see the GGSC section above for more on these), providing two alternatives in this area. These provide subtly different colors in the tone of the instrument.

While the new instrument is more expressive than the original instrument, and includes more capabilities, it has been designed to reduce CPU load by reducing the number of voices used per sustained note by half. Garritan indicated this saved approximately 5% CPU utilization on a 2.4 GHz Pentium 4 system. The general idea is to make it practical to run a string quartet of Garritan Solo String instruments in parallel on a single system while keeping latency at responsive, playable levels. Convolver-related latency has also been virtually eliminated with the V2.01 instrument, whereas that component of the V1.08 instrument adds approximately 2.9 ms of latency. (While 2.9 ms is a nearly unnoticeable amount by itself, remember it is also getting added to any ASIO- and DAW-induced latency, as well as the latency from any delay-compensated plug-in effects.)

While the changes in GSSV 2.0 over the original GSSV don't go as far as the changes introduced in GGSC do in terms of the overall evolution of the Garritan Solo Strings instrument line, they nevertheless add significantly to the playability and realism potential of the instrument. The sound of the new instrument can be significantly warmer, and having two impulse responses is especially nice for providing instrumental tone color options to suit individual or song-based preferences. The bottom line is that, for \$30, this is truly a no-brainer upgrade for GSSV users.

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