



## **Review: Waves Renaissance Maxx** by Rick Paul - 03rd April 2003 -



Waves has been at the forefront of the professional audio plug-ins business pretty much since professional audio plug-ins have existed. It is rare to read the equipment and software lists of a major producer or recording studio with a computer-based system and not come across the name Waves in the software, and sometimes hardware, column.

With Waves' professional market presence and high-end reputation, though, has come a price point that may seem out of reach for the hobbyist or budget-strapped, just-starting-out professional. Having been in the "budget-strapped" category myself over the last few years, I've looked, somewhat longingly, at the Waves product line on several occasions. However, between my budget and the way Waves has packaged their plug-ins -- there is no cost-effective way to purchase individual plug-ins, and the plug-ins I most wanted at any given point tended to be split across several plug-in bundles -- I never quite got around to adding my name to the list of Waves' customers. Instead, I augmented my plug-in collection with individual plug-ins and bundles that more closely matched my functional needs at the time, as constrained by my budget, and several Waves' plug-ins simply remained on my "someday" list.

The recent introduction of the Waves Renaissance Maxx (RenMaxx) collection changes things, though. For the first time, Waves has a fairly comprehensive suite of tools at a price point that, while still on the premium side compared to some of the offerings out there, at least reaches down significantly further. With a street price of roughly half that of their Native Gold bundle (which delivers even more comprehensive functionality, but which still comes in at roughly double or triple the price of competitive offerings that deliver just the most frequently needed capabilities), Waves makes their offerings accessible to a whole new tier of potential users. Even users considering competitive bundles with similar functionality at a lower price-point will likely, or at least would be well served to, ask themselves if it might be worth spending a little more to gain the benefits that have attracted professional users to Waves' products over the years.

While the RenMaxx bundle would be useful to users of most any Windows- or Mac-based DAW, since this is CakewalkNet.Com, we will be looking at the RenMaxx bundle primarily as it fits into the SONAR 2.2 environment. In particular, we will be looking at such questions as to the value available to SONAR 2 and SONAR 2 XL users, how well the capabilities of the RenMaxx bundle work inside SONAR, and how the RenMaxx alternative stacks up to select competitive offerings available to SONAR users.

### **The Basics**

The Renaissance Maxx Native 4.0 bundle combines Waves' earlier Renaissance Collection (Renaissance Compressor, Renaissance Equalizer, and Renaissance Reverb) and Renaissance Collection II (Renaissance DeEsser, Renaissance VOX, and Renaissance Bass), both of which are now discontinued, with the brand new Renaissance

Channel plug-in. We'll look at each of the plug-ins in detail below, but the basic gist of the bundle is that you get the vintage-modeled equalizer, dynamics processor (compressor/limiter), and reverb of the original Renaissance bundle and the specialist processors (de-esser, vocal processor, and bass enhancer) from the Renaissance II pack, along with a brand new channel strip on steroids which combines and improves upon functions from several of the existing processors while bringing some new functionality to the table.

U.S. list price for the native version of the RenMaxx bundle is \$600, with street price coming in right around \$450 everywhere I checked that claimed to have it in stock. We will be concentrating on the DirectX versions of the plug-ins for Windows, since they are fully functional, including supporting the DirectX 8 (and later) automation which SONAR uses to allow automating plug-in parameter settings. However, it is also worth noting that the boxed product and the downloadable installer for Windows also include the VST versions of the plug-ins, which can be installed and used on the same physical system if, for example, a user is using both SONAR and Cubase. The boxed version of the product also includes various native (i.e. non-TDM) versions of the plug-ins for the Macintosh.

## **Software Protection and Installation**

Software protection is via the PACE InterLok challenge/response system, though support for PACE's iLok (dongle-based) support has been announced as a future option for those who prefer it. I realize "PACE" is a bad word for some in the SONAR community, and can often spawn almost religious arguments including heated testimonies with regard to past experiences caused by InterLok's driver-level support in the face of changing operating system platforms and certain types of system configuration issues. I can also attest to having experienced a few of those issues myself with another vendor's products, most of which were due to issues which had been resolved by PACE, but which had not yet made it into the vendor's shipping software. I did get a fairly good understanding of the nature of the issues in the process, and the specific products were of such a use in my production environment that I just ended up considering the PACE element a "necessary evil".

While I would personally prefer that Waves had used software protection that did not require a driver-level component, due to the compatibility risk the InterLok approach could cause for future operating system upgrades, and due to the potential of system-level conflicts from the software protection mechanism itself -- and I have experienced both types of issues in the past -- I am happy to report that I had no problems whatsoever in installing or authorizing the Waves RenMaxx bundle. The only minor point of confusion was that my system had to reboot after the installation process detected that it needed to update my PACE InterLok drivers, and I then had to manually restart the RenMaxx installation process -- it did not just automatically resume where it left off once the system had been rebooted. I am aware, though, that, if my hard disk ever crashes and I have to replace it, I will need to reauthorize my RenMaxx plug-ins, as the authorization is tied to my hard disk. Future users of the iLok system will not have to worry about that.

It is also worth noting that there is one advantage to the PACE software protection system. In particular, it, and other software protection systems that provide similar capabilities, allows for getting access to the fully-functional software for whatever period the vendor allows -- 14 days in Waves' case -- to "try before you buy". Before you do, though, you should be aware of three things: First, the facility for evaluating the software will install the PACE drivers on your system, but will not remove them if you remove the software. Second, if you want to purchase, say, RenMaxx but evaluate other Waves software to decide if you want to purchase it, or vice versa, the time set for the evaluation will begin whenever you install the first of those products. Thus, you may need to take special care in planning your installation schedule to make sure you allow enough time to evaluate any software prior to the end of 14-days after installing the software you are purchasing. Finally, evaluating the RenMaxx package, especially in the context of using it on a real life project, could be hazardous to your credit card balance!

## **Documentation**

I have a love/hate relationship with the Waves documentation. I'll explain that in a minute, but let's back up a bit first.

The on-line documentation for the RenMaxx suite consists of an Adobe Acrobat (PDF) format file for each plug-in, another, called the "WaveSystem" guide, to describe common operations and interfaces across the plug-in suite, and a few other miscellaneous documents in PDF or HTML format. In many areas, the documentation is extremely thorough, and, in others, it is at least as thorough as it needs to be. It is generously laced with diagrams such as screen shots, and the authors clearly have a sense of humor that helps make the documentation a reasonably enjoyable read -- well, at least as technical documentation goes.

What I really love about the Waves documentation is that Waves not only explains what features are and how to use them, but they also explain why they made key design decisions and, in some cases, where the tradeoffs are. The discussion of equalizers and equalizer history, including tips for various types of audio sources, in the Renaissance Equalizer manual is a particular highlight, and would be worth reading even if you had no prayer of being able to afford the RenMaxx bundle anytime soon. Of course, understanding the material covered may make you even more anxious to get out that credit card, so don't say I didn't warn you!

What I don't like so much about the Waves documentation, besides its being in PDF format rather than a hyper-linked on-line help format of some kind (or even a more advanced PDF format that permits hyperlinks such as that used in Finale family notation products), is that it can be a bit too comprehensive at times, with the potential of confusing the user. In particular, the RenMaxx suite contains seven plug-ins, but the documentation relatively frequently refers to other Waves plug-ins that the user who only purchases the RenMaxx suite will not have. In some cases, the references are obvious enough to not cause confusion. In other cases, though, there can be lengthy discussion of user interface conventions that just don't apply to any of the plug-ins within the RenMaxx suite. Similarly, for the user of one particular platform, such as Windows in my case, there can be similar confusion with lengthy discussion of conventions that apply to another platform as it isn't always made crystal clear that a particular convention is "Mac only", for example.

While I realize that vendors of products that cross multiple platforms, multiple plug-in formats, and so on need to find ways to consolidate their documentation and product packaging, I do wish the documentation made it more consistently clear what exceptions applied where. For example, I'd rather not say how long I spent trying to use the facilities for copying and pasting parameters within a plug-in before I realized the copy/paste facility must be Mac-only.

On balance, though, the RenMaxx documentation is very good, providing more than adequate information for both reference and "getting acquainted" purposes.

## **Cross-Plug-In Features**

Before diving into the individual plug-ins, it is worth spending a moment on some of the common aspects of the RenMaxx bundle. Waves provides a twenty-three page "Waves System Guide" document to discuss various common elements of the Waves plug-ins, including how to use the various types of controls in the plug-ins' user interfaces, how to manipulate multiple controls in parallel where applicable, how their various types of meters work, and much more. I would recommend the first time RenMaxx bundle user at least skim that document as it includes some useful tips which might not be obvious from simply looking at the plug-in user interfaces. The manual lists features of Waves plug-ins that are not in the RenMaxx bundle, and other features which may apply to RenMaxx on some platforms but not others. This makes for more material to sift through than is really necessary for any given user. With that in mind, let's talk about a few highlights that are relevant to RenMaxx users:

First, just bringing up any of the RenMaxx series plug-ins will immediately give the user a sense of a family of plug-ins designed with a sort of subdued good looks, but which is by no means flashy. One might call it a "professional" look, and diving just a bit deeper will reveal that the individual plug-in interfaces provide ample visual feedback and layouts that help make the purpose of various sections of each interface intuitive. Even without consulting the documentation, most plug-ins are intuitive enough to overcome the "where do I start?" syndrome that plagues some plug-in interfaces.

The even better news is that the RenMaxx plug-ins don't sacrifice efficiency for ongoing use in order to provide interfaces that are intuitive for first time users. The same logical control groupings that make the interfaces intuitive keep controls that are commonly used together physically located near each other. Waves tends to engineer the flow of each plug-in's interface to suit the process flow an engineer will likely use in arriving at settings for that plug-in. Where it makes sense, Waves also provides graphs with objects that can move in multiple directions to adjust multiple parameters with one mouse movement.

Not all the capabilities of the user interface controls will be obvious from the interfaces themselves, though. This is where the "Waves System Guide" can be helpful. For example, Waves provides the ability to select multiple controls at once, then manipulate them via a single mouse or keyboard arrow keys movement, and the software is intelligent in what it does with respect to movement in different directions. One common use for this might be to drag a multi-point equalization curve around while keeping the curve shape constant. With the Waves interface, this is as simple as selecting the applicable controls on a graph or selecting the applicable numerical controls, then dragging the mouse, or making similar movements with the arrow keys, to reposition the selected curve points.

Another area of commonality between RenMaxx plug-ins makes it easy to experiment with plug-in settings while providing a safety net of sorts in case all the tweaking makes things worse instead of better. A/B comparison settings, with the ability to copy the current setting to the other setting, are provided, as is a single level undo capability. Note, though, that switching between the A and B settings will clear the undo buffer.

Waves plug-ins also support presets and user settings. In addition to the obvious capabilities this brings to mind, Waves adds a facility they call Setup Libraries. The notion is to store a number of user settings or presets in a single library file which is easy to exchange between users and systems. In addition, for those who like to go wild with presets, this can provide a way of organizing the presets, for example, grouping settings you might use in mastering together in one library, ones you might use in mixing in another library, and so on. It is also worth noting that a single setup library can contain presets for multiple plug-ins, and the facility for loading presets is intelligent enough to only show presets that work for each plug-in even though the library may contain settings for multiple plug-ins.

All plug-ins can be automated if the host DAW supports automation. In the case of SONAR, this means using DirectX 8 (or later) automation. Pretty much all parameters can be automated, too, though just because you can do it doesn't necessarily mean it is a good idea. For example, automating reverb type changes while sound is playing through the reverb might be something to avoid due to the abrupt changes it will cause. Of course, if you're going for strange, go for it!

Meanwhile, let's get on with looking at the individual plug-ins.

## Renaissance Compressor

Waves' Renaissance Compressor (RComp) is billed as a "classic warm compressor and expander with a simple, optimized interface." Well, yeah, that sounds about right, though that summary may not quite do justice to how good RComp sounds, nor to the degree of power and control the "simple" user interface provides.

If you're looking for simple, just insert RComp into a track, or across a mix bus, load one of upwards of 20 descriptively named presets (e.g. "Bass Guitar", "Vocal", "Drums", "Mastering Opto", etc.), set the compression Threshold slider, which is conveniently located alongside the input level meters for visual assistance, tweak the compression Ratio, if you like, by moving its slider on top of the gain reduction meter, then raise the output Gain slider until you get levels you want and to make up for any gain reduction from the compression and/or to force the desired degree of limiting you like. The combination of excellent starting points, in the form of presets, and strong visual feedback to aid your ears in setting the various levels makes things easy and efficient, and you'll be on your way to excellent sound in no time.



For those who want to tweak, though, there are number of additional options:

A release mode switch can be set to either Manual or ARC (Auto Release Control). In Manual mode, RComp's release time setting is taken literally (i.e. as a number of milliseconds). In ARC mode, though, RComp calculates the release time based on the input signal, and the release time control is used as a scaling factor. Waves describes the ARC mode as having release characteristics similar to a vintage program (i.e. mix) compressor, though it can also be useful for individual tracks.

A compression behavior switch toggles between Opto and Electro modes. The Opto mode is a vintage emulation mode which slows down release times as gain reduction approaches 0dB and speeds up the release time when gain reduction is greater than 3dB. Electro mode is the inverse of Opto mode -- i.e. release time gets quicker as gain reduction approaches 0dB and slows down once it passes 3dB. To put it in less technical terms, the Electro mode generally allows making more extreme rises in perceived sound level more transparently, and is thus the likely choice for in-your-face tracks or squeezing that last possible bit of gain out of a mix, while the Opto mode, by letting more of transients through, but clamping down faster as the level subsides, may be the better choice for getting punchy drum or lead instrument tracks, or maintaining the punch in a mix when average levels don't need to be raised as much.

A character switch toggles between Smooth and Warm modes. Smooth will be the choice for the maintaining the original sound's character as much as possible. The Warm setting adds lower frequency harmonics to the sound as deeper compression is applied, thus achieving an analog-style warmth similar to the compressing effects of analog tape.

The remaining controls are similar to those found on most compressors, including Attack, Release, Threshold, Ratio, and (output) Gain. See the notes on ARC mode above for more on the RComp-specific behavior of the Release control. Also worth noting is that the Ratio control allows for RComp to be used as an expander by setting a ratio less than 1:1. Input, gain reduction/expansion, and output meters, along with a limiter-engaged light on top of the output meters, provide visual cues to greatly aid in setting the Threshold, Ratio, and Gain controls, respectively.

SONAR 1 or 2 (i.e. non-XL) users who haven't purchased a third party compressor plug-in have only the Cakewalk FX1 series Gate/Compressor, Expander/Gate, Limiter and Dynamics Processor for compressor/limiter duties. While the sound quality of these plug-ins is okay, they are significantly hampered by their almost complete lack of useful visual feedback, and this results in a compressor's being most SONAR users' first third party plug-in purchase. RComp, while not as flexible as the FX Dynamic Processor for setting a compression curve, provides a significant step up in usability and sound quality. Any limits on flexibility imposed by not having a directly modifiable compression curve are more than overcome, for most practical purposes, by the various RComp options mentioned above.

SONAR 2 XL users, on the other hand, will already have the excellent sounding Timeworks CompressorX. While it also has some user interface limitations, in this case due to its too close emulation of a hardware compressor interface, CompressorX is a strong enough contender that SONAR 2 XL users will more likely look to other compressor plug-ins once they get to the point where they are simply looking for other flavors. To that end, RComp delivers, with the Warm character being especially useful on the color side. For my purposes, with both RComp and CompressorX in my palette, I find RComp covers more bases, and I am much more likely to reach for it first, reserving CompressorX as a flavor. This is because I tend to slightly prefer the sound of RComp for most uses, especially with the Warm character switch engaged. Even were sound quality in a given context equal, I strongly prefer RComp's stronger visual feedback.

Of course, SONAR users who are considering purchasing a third party compressor plug-in will have other choices besides RComp. Some of the popular choices include dB-audioware's dB-D, PSP Audioware's MixPressor, and Ultrafunk's Sonitus fx:compressor. All of these have pros and cons versus RComp. For example, dB-D has a true sidechain that allows keying dB-D on one track off another track, for example, for voiceover ducking applications, but it does not support automation, nor does it provide the vintage compressor characteristics that RComp provides. The PSP MixPressor does provide the vintage compressor emulation, and has a number of additional controls (e.g.

frequency-dependent keying of the compressor, continuously variable knee, etc.), but may not be as suited to uses where greater transparency is required as it tends to be heavier on the analog-style flavor than RComp. The Ultrafunk fx:compressor does have both vintage and "normal" modes, more flexible compression curves, and perhaps the best user interface ergonomics out there, but is only automatable in VST format.

Of course, each of the plug-in compressors out there has slight, or not-so-slight, differences in their characteristic sound, which any given SONAR user may prefer, or not, in a given context. While I'd rather have all the above-mentioned selections available in my palette, if I had to have only one to hold me for any conceivable uses, RComp would be my first choice. In particular, I feel it is at or near the top of the heap for sound quality in most situations, and is probably the simplest to operate when time is of the essence and the extra flexibility provided by a few of the competitive plug-ins is not needed. The only disadvantage for RComp in this situation is that, unless you need the entire RenMaxx suite, its single plug-in price of \$200 is higher than that of any of the above mentioned competitors, and way higher than most of them. Thus, choosing RComp means justifying the cost of the entire RenMaxx bundle, and users who only want a compressor may be more likely to look elsewhere.

## Renaissance Equalizer

On the surface, the Renaissance Equalizer (REQ) appears to be nothing special. It is a 2 to 6 band parametric EQ plug-in with the customary active EQ graph that allows dragging its nodes to set band frequency and gain (Alt-dragging a node will set bandwidth, or "Q"). Numerical parameters are also available for those who prefer the immediacy and precision of direct keyboard entry of values. Output meters with gain controls (including a very useful auto trim feature that takes advantage of REQ's meters' infinite peak hold feature to normalize the signal based on historic peak meter readings), band type controls (cut, shelf, and bell), and various modes of dealing with stereo linkage (dual mono and the default of stereo linked) round out the controls.



It doesn't take much playing around with REQ, though, to notice there is more there than meets the eye. Perhaps most importantly, for similar settings, REQ tends to just sound "smoother" than most other plug-in equalizers, and more extreme settings can be used with less harshness than similar settings might yield elsewhere. REQ somehow seems to subtly enhance, but not exaggerate, the sound going through. Look a little closer at the band type settings, and you'll notice that, unlike most EQs that have shelf filters and/or cut filters as choices only on the end bands, REQ also provides shelf filters as alternatives to bell filters on middle bands, with the choice of cut, shelf, or bell filters on the ends. The availability of dual mono mode is also fairly unusual for a software EQ plug-in, and may be useful for certain types of corrective repairs on stereo source material, though the extra controls exposed in dual mono mode are not available for automation. To really understand what is so special about REQ, though, you'll likely need to dive into the documentation, which gives excellent, in-depth information about the design of the various types of filter bands.

Waves departed from traditional software-based equalizer design to some degree in each of the three filter types: Their cut filters (i.e. low cut/high cut), which are only available on the end bands, not only use the Q parameter to adjust the slope of the frequency response rolloff, but also provide a slight bump (i.e. increase in gain) around the cutoff frequency, which results in more musically pleasing results. Similarly, their shelf filters, which they call resonant shelf filters, provide a slight bump around the "knee" of the curve, which also leads to more musically pleasing results. This behavior was modeled after techniques used with the classic Pultec equalizers where it was common practice for engineers to both boost and cut the same frequency. Shelf filters are available on all bands of REQ. REQ's bell filters are asymmetrical -- that is, for the same Q setting, a cut will have a narrower bandwidth than a boost. Again, this is for musical reasons as most engineers tend to boost a wider range of frequencies to enhance a particular characteristic of a sound, but cut narrower ranges to solve problems. Taken together, these design decisions both improve the musicality of the sound delivered by REQ and make REQ more efficient to use for achieving musical results.

One thing you should not expect with REQ is an extensive preset library like RComp has. There are exactly four general purpose presets, though a setup library that provides an additional 18 fairly special purpose settings (e.g. hum reduction notches, bell curves in various ranges, etc.) is available. For most experienced professional users,

who will make EQ settings by ear, lack of specific instrument-oriented presets (e.g. snare, kick, acoustic guitar, bass guitar, etc.) is not a limitation. For less experienced users, though, having such a library might have been useful, even if just for educational purposes. There are, however, various instrument-oriented EQ tips in REQ's on-line documentation, and, if users find they use specific settings frequently for a given instrument, they can always save their own presets.

SONAR users have the Cakewalk/DSP-FX FxEq and the old Cakewalk Parametric EQ. Compared to both Cakewalk EQs, REQ is a significant upgrade. Neither of the Cakewalk EQs provides cut filters, only shelf and bell filters, and REQ just sounds better for most purposes. FxEQ does have more bands than REQ -- up to 8 parametric bands plus high and low shelf filters -- but REQ's flexibility of having Q on every band and allowing shelf filters on non-end bands, along with the resonant peaks of the shelf and bell filters in REQ, provide the possibility of configuring more complex curves with less bands than most other EQs would use. Besides, how often do you really need more than 6 bands of EQ anyway?

SONAR 2 XL users will also have the excellent Timeworks Equalizer, which provides 6 bands of bell filters, the end two of which can be toggled to shelf mode, along with dedicated high and low cut filters, for a total of up to 8 bands. The Timeworks EQ also has both vintage and clean modes, with the vintage mode's being closest to the character of REQ, and adds a useful real time FFT meter to its graphic mode for additional visual feedback to aid in setting EQ parameters. To my ears, the Timeworks EQ has a slightly more aggressive sound than REQ for similar settings, and, though I really appreciate the FFT meter in the Timeworks EQ for assisting my ears in setting parameters, I tend to lean toward REQ more often than not partly for its sound, and partly because it is friendlier for tweaking, other than on the visual feedback element, due to a few idiosyncracies in the Timeworks user interface. Also, it is worth noting that the Timeworks EQ does not allow recording automation of its parameters from its graphical interface, only from the hardware simulation interface, whereas REQ makes it a breeze to automate parameters directly from its filter response graph. Thus, while there is a much narrower gap here, and the Timeworks EQ does have a advantages over REQ in a few areas, I still find there to be good value in REQ for SONAR 2 XL users.

Another popular equalizer plug-in among SONAR users is Ultrafunk's Sonitus fx:equalizer. Like REQ, fx:equalizer is highly flexible, providing high and low cut, high and low shelf, and bell filters on each of its up to six bands. The Q control in fx:equalizer serves as a resonance control for cut filters and as a slope control for shelf filters, thus approximating some of the musical enhancements REQ provides in those areas. To my ears, these equalizer plug-ins are in the same ballpark, but there are subtle differences in sound for similar settings where I find it comes down to what is best for the given context. If you need dual mono, or would prefer not to use VST mode for automation (the DirectX version of the Ultrafunk plug-ins cannot be automated), though, REQ will be the ticket.

## Renaissance Reverberator

Waves' Renaissance Reverberator (RVerb) attempts to emulate the sounds of various vintage reverbs while providing the kind of modern, highly visual, and extremely flexible, interface that can really only exist in the software world. To cut to the chase, it is successful on both counts.



While RVerb has a single user interface, its relatively comprehensive list of reverb types, which are essentially different reverb engines, changing the nature of both the reverb tail and early reflections behavior, make RVerb like many reverbs in one. Reverb types provided include two types of halls, room, chamber (i.e. early studio "echo chambers"), church (i.e. of the large, historical European variety), two types of plates, reverse, gated, non-linear, "EchoVerb" (i.e. bouncy, for example to emulate a spring reverb), and "ResoVerb" (i.e. uses equal early reflection spacing to provide a resonant edge). This level of variety lends RVerb to being a "one size fits all" reverb plug-in, where users of plug-in reverbs with only a few reverb type selections might be more likely to need to use different reverb plug-ins for different flavors.

I counted 19 tunable parameters on RVerb. While that may seem like a daunting number, it also means that professionals who want detailed control over almost every aspect of the sound will likely find what they need. As

for the rest of us, it is comforting to know that control is there if and when we get to that point, and, in the interim, Waves has provided an absolutely huge number (I counted over 80) of descriptively-named presets. Even if you are a tweaker, you may find the presets to be of value for saving time to get things in the ballpark, at which point you can tweak 'til your heart's content. Let's dive into those controls, shall we?

In the upper left of RVerb's user interface are reverb damping controls, which allow setting the crossover frequency and damping ratio for high and low damping. A reverb damping graph makes it quick to visually set the frequency and ratio for either high or low damping (or even both at the same time if the setting changes needed for one will parallel those needed for the other) at once by dragging cross-hairs on a frequency-versus-amplitude reduction graph.

In the upper right hand corner of RVerb's interface are similar controls for setting EQ crossover frequencies and gain/reduction for high and low gain filters. These filters affect the signal coming into RVerb prior to hitting the early reflections and reverb tail stages. It seems curious, and somewhat counter-intuitive, that the EQ controls, which affect the signal coming into the reverb, are visually placed after the reverb graph, while the damping controls, which affect the signal coming out of the reverb stages, are placed visually before the reverb graph. Much more intuitive would be to place them left-to-right in the order in which they occur in the plug-in's signal flow.

In the upper center of RVerb are the reverb type selector, a Decorrelation setting, and a time response graph which visually depicts the first approximately 200 milliseconds of the wet signal, thus generally at least giving a pretty good idea of the nature, in terms of spacing and amplitude, of the dry signal, early reflections, any pre-delay, and the initial slope of the reverb tail. The Decorrelation control affects the degree of correlation between the two stereo channels. It is a toggle control that switches between seven settings, and subtly affects the color of RVerb's sound.

The bottom left of RVerb's user interface is dedicated to reverb properties, with familiar-sounding names such as Predelay, Time, Size Diffusion, and Decay. Despite the familiar names, Waves provides some interesting twists in their implementation.

Predelay can serve as the traditional delay of the signal sent to the reverb tail generator, but it is also possible to set a negative pre-delay time. In that case, the dry signal, which will turn red in the time-response graph, is delayed, for example for use with an inverse reverb (in which case you would likely want to delay other tracks to compensate).

Reverb plug-ins from different vendors tend to use parameters called "reverb time" and "decay" fairly interchangeably to control the length of the reverb "tail". With RVerb, Time is the parameter with that traditional meaning, while Decay modifies the Time parameter to cut off the reverb tail prematurely, for example to achieve gated reverb effects. This allows all reverb types to be gated, and is different from the gated reverb type which also has implications on other aspects of the reverb such as early reflection characteristics. If the Time parameter is set to Linear, then reverb tail behavior is similar to in other reverbs with decay time or reverb time set to the same value.

Size affects various characteristics, such as early reflection spacing and size of the reverb tail, differently depending upon the reverb type selected. For example, with the Plate II reverb type set, decreasing the Size parameter shrinks early reflection spacing and makes the reverb tail ramp up to maximum amplitude faster, thus also making for a gentler slope on the decay portion of the tail. With the Reverse reverb type, the effect is just the opposite -- i.e. as Size gets smaller, early reflection spacing gets farther apart, the reverb tail ramps up more slowly, and the tail's decay falls off more steeply. With the Gated reverb type, the reverb tail behavior is similar to with Plate II, but the early reflection spacing is not affected at all.

The Diffusion control affects the balance between the dry signal and the early reflections for feeding the reverb tail generator.

In the lower right portion of RVerb's interface are reverb level controls and output meters. Early Reflection and Reverb controls determine -- you guessed it -- the output levels of the early reflections and reverb tail portions, respectively. A Wet/Dry control allows setting the output of RVerb to be anywhere from 100% wet (combination of

early reflections and reverb tail, but no dry signal) to completely dry. Finally, a Gain control allows reducing the output of RVerb by up to 24dB.

SONAR users will be looking at RVerb as a potential upgrade for, or complement to, the excellent Cakewalk/DSP-FX FxReverb, which is based on the DSP-FX StudioVerb. To that end, RVerb provides a number of enhancements. The most noticeable on initial inspection is the dramatic visual difference due to the three graphs in RVerb's interface. While some who use only their ears for setting parameters may consider that purely cosmetic, those of us who either haven't yet developed sufficiently golden ears, or just prefer having visual clues to the parameters we are setting, will greatly appreciate this particular enhancement. In fact, I would go so far as to suggest the attention to detail Waves has put into the early reflections area of the time-response graph goes above and beyond anything else I've seen, and in a very useful way. RVerb also delivers a number of different flavors of reverb, and also provides quite a number of additional parameters to tweak the sound of the reverb. FxReverb does provide motion rate and depth controls, but that could also be simulated by placing some sort of delay-based modulation plug-in after RVerb, if needed. As for sound quality, both FxReverb and RVerb are strong, and I consider RVerb to be very interesting to complement what FxReverb already brings to the table.

SONAR users looking at third party DirectX reverbs will also likely be looking at Timeworks ReverbX, Ultrafunk Sonitus fx:reverb, and Wave Arts MasterVerb. It's been awhile since I've tried ReverbX, but my general feeling is that it is a high quality reverb, also with a number of different flavors, but with a hardware-look interface that provides little in the way of visual feedback, and which is also way up there on the high end of the price scale. In comparison, RVerb delivers better value, a much more intuitive interface, and greater tweaking flexibility. Ultrafunk's fx:reverb has a highly intuitive interface, though not quite as much so as RVerb in the area of early reflections, provides excellent value for the money (and excellent sound quality), and provides a unique, and useful, stereo width control, but doesn't provide as broad a range of reverb flavors, and only its VST version can be automated. Wave Arts' MasterVerb has what I would characterize as a more transparent (less vintage?) sound, which may be useful for certain types of music, and has a very different style of visual feedback which some may prefer and others may not (I fall into the latter category), but is not as flexible as RVerb in term of parameters available for tweaking, nor does it have anywhere near as many flavors. Being somewhat of a plug-in junkie, my feeling is, "the more, the merrier," when it comes to having most of these (and a few more that don't directly speak DirectX) available as flavors. If I were forced to have only one, though, it would be RVerb, hands down, due to the number of flavors it provides, the consistently strong sound quality, and the highly intuitive interface.

## Renaissance Vox

In some ways, Renaissance Vox (RVox) is an altogether different species than RComp, REQ, and RVerb. Whereas all those plug-ins, though relatively easy to use, provide a significant number of options for tweekers and seem especially geared toward professionals, RVox provides only three parameters, only two of which are likely to be used a fair percentage of the time, and seems mostly geared toward those who just want to achieve good results easily and quickly.

That isn't to say RVox isn't capable of achieving professional results, nor that there aren't good uses for it in a professional environment. Rather, the orientation and features simply make RVox even more accessible to users who are less experienced, but who want to achieve better results than they might if they were forced to make more choices with respect to parameter settings.



Additionally, while there is no law that says you can't use RVox for other tasks, it was really designed for one thing and one thing only -- to make it nearly effortless to achieve professional results on vocals and human speech. Because Waves could make the assumption that RVox would be used primarily to process vocals, as opposed to, say, drums or bass guitar, they could make settings decisions that would normally be left to the user in the form of tweakable parameters. As such, RVox's simple interface understates the power within the plug-in, to the benefit of both less experienced users and users who are simply in a hurry but don't want to compromise vocal sound to achieve quick results.

On the inside, RVox is basically three processors: A downward expander helps remove background noises in quiet areas of the source signal. A compressor with automatic make-up gain limits dynamic range for a more "in your face" sound. Finally, a limiter ensures no clipping occurs.

On the outside, three controls are available. The Gate control sets the threshold for the downward expander, though the expander exhibits soft knee behavior, so it is not an absolute threshold. The Comp control sets the amount of dynamic range reduction desired, as well as the amount of make-up gain applied. Finally, a Gain control allows reducing the output level of the plug-in, and can thus be used as a track fader. One tip Waves suggests is selecting both the Comp and Gain controls, and moving both in one motion, thus making it possible to hear the results of the compression without being influenced by the make-up gain (i.e. since the gain reduction from the Gain control counteracts the make-up gain of the Comp control).

There are also three meters to provide helpful visual feedback. An input signal meter is useful as a rough guide for setting the Gate control, a gain reduction meter shows total gain reduction from the compressor and expander, and an output level meter shows final output levels from the plug-in.

Using RVox in most cases is as simple as setting the compression level for the desired amount of gain reduction, then setting the expander threshold to reduce unwanted noise. This simplicity makes RVox especially useful for processing vocals on quick demo recordings, and I also tend to reach for it first for processing background vocals.

If RVox has any direct competition, I'm not aware of it. Its main competition would come from compressors and compressor/gates, such as those mentioned above in the discussion of RComp, and channel strips, such as those mentioned below in the discussion of RChannel. I might add that the expander portion of RVox is a feature that RComp does not have. However, if you need that, but still want the extra control of RComp, see the discussion of RChannel below.

## Renaissance Bass

Renaissance Bass (RBass) is another specialist plug-in with an easy-to-use interface. A technical description of its function would probably call it a bass (or low frequency) harmonic exciter. In essence, it operates based on the notion that the human brain can reconstruct a missing fundamental from just the harmonics of that note. Thus, by enhancing the harmonics of a bass frequency, it is possible to give the listener the impression he or she is hearing a note that can't be reproduced adequately, for example due to limitations of playback speaker size.

Setting RBass is simple: Use the Freq control to set the crossover frequency that determines what frequencies in the source material will have harmonics added. Determine whether the input source will be included in the output of RBass or not, and set the In/Out toggle accordingly. Use the Intensity slider to control the level of the effect, then use the Gain control to apply gain reduction if necessary.



Three meters are provided to visually assist the user in setting the controls: An OriginalBass meter shows the input level of the source material that falls below the crossover frequency. A Harmonics meter shows the level being added by the harmonics generated by RBass. Finally, an Output meter shows the level of the processed signal, and includes an infinite peak hold counter, which can aid in setting the gain reduction control.

There are two key applications for RBass: For fixed sound installations, and other applications where there will be a predictable speaker size which is not capable of producing the full range of bass frequencies in the source materials, RBass can be used to remove the original bass signal and replace it with only the generated harmonics. Perhaps the more common use for SONAR users will be to enhance the existing bass signal with harmonics to help bring the bass out better on a wide range of speaker sizes. In the latter case, harmonic enhancement can serve as an alternative to EQ, and may have less harmful side effects than EQ would with respect to having bass notes interfere with instruments in other portions of the frequency spectrum.

SONAR users considering a bass enhancer are likely to be considering at least two other options. PSP Audioware's MixBass includes bass harmonic generation, as well as other bass enhancement functions such as bass frequency compression and analog-style saturation. Its interface is slightly more complex than that of RBass, but it also provides additional processing options. It does not, however, allow removing bass frequencies from its output signal as in a fixed speaker application, and the additional options will make it slightly more complex to set than RBass when all you want is some harmonic enhancement. The Ozone plug-in from iZotope also provides bass enhancement in a more general mastering and harmonic enhancement context. While Ozone would be overkill for just bass enhancement, users who are primarily doing bass enhancement as part of mastering, or other post-production processes, may appreciate the integration of bass enhancement with the other mastering-oriented functions Ozone provides. For simple bass enhancement, though, RBass will be much more straightforward to use, and much less demanding of system resources.

## Renaissance DeEsser

Another special purpose processor, the Renaissance DeEsser (RDeEsser) nevertheless does not quite attain the level of simplicity of RVox or RBass. Of course, reducing sibilance and other similar high frequency content while minimally affecting the rest of a potentially full range audio signal is inherently a somewhat more complex application. It requires more judgment calls to be made by the user, and this necessarily requires additional controls.



The task of reducing sibilance from an audio signal requires first identifying where the sibilance lies within the full range signal, then reducing that, and, to as great a degree possible, only that, without adversely affecting the quality of the rest of the signal. To facilitate determining where the sibilance lies, RDeEsser provides toggle switches to listen to RDeEsser's output or only the "side chain" (i.e. portion of the signal's frequency range that is used to trigger the processing). Listening to the side chain, the user would manipulate the Frequency control to hone in on the sibilance, then switch back to the Audio (full output) mode to adjust the Threshold control to adjust RDeEsser's sensitivity, which is helped along greatly by a graph that shows, among other things, any frequency dependent attenuation. The Range control can then be used to adjust the degree of attenuation to try and make it sound as natural as possible (i.e. for typical uses -- there is nothing saying you can't "abuse" the plug-in by applying unnatural amounts of attenuation, for example to give the singer a lisp).

The response of the detection and attenuation circuits is modified by two mode buttons. A Type button toggles the side chain between band-pass and high-pass mode. In band-pass mode, only a relatively narrow band of frequencies around the frequency specified by the Frequency control triggers the processing, whereas, in high-pass mode, any frequencies above the specified frequency trigger the processing -- assuming in both cases the energy level exceeds the threshold. A Compression Mode button toggles between wideband compression (i.e. compressing the entire signal) and split-band compression (i.e. compressing only the frequencies within the side chain). In the latter case, the Type button also affects what frequencies are compressed.

SONAR users seeking a de-esser will likely also be considering dB-audioware's dB-S. Besides being an excellent value, dB-S provides the ability to set the bandwidth of the detection circuit for its equivalent of band-pass mode. However, dB-S does not provide a true high-pass mode for detection (it does provide a high-pass mode for attenuation), and dB-S' bandwidth control in the detection circuit is the only way of controlling the sensitivity of the detection circuit. In practice, I find it much easier, and faster, to achieve natural-sounding sibilance reduction with RDeEsser, though either can achieve acceptable results.

## Renaissance Channel

Renaissance Channel (RChannel) is the new kid on the block in Waves' Renaissance series. However, while it does offer some brand new features, and the plug-in itself is new, it will seem instantly familiar to users of RComp, REQ, and RVox, because it incorporates key portions of their functionality while adding useful new twists.

In fact, RChannel creates somewhat of a dilemma. Most of the time, when I think of a channel strip processor, which is the function RChannel fulfills, I think of a compromised set of features, generally comprising at least a compressor and Equalizer, sometimes also a gate and/or limiter, where the general philosophy can be summarized as something along the lines of, "use the channel strip for less important tracks and when you need to conserve processing power, but use the individual plug-ins for critical tracks and when you need more flexibility." With RChannel, though, some of its enhancements over REQ and RComp will encourage using RChannel on more critical tracks when those enhancements will help get a particular sound. Still, the applicable modules in RChannel don't do everything the similar standalone modules do in all cases, so neither is it as simple as just reaching for RChannel anytime you need both an EQ and a compressor. Let's take a closer look.

At its most basic, RChannel comprises four channels of REQ, a dynamics section that borrows heavily from RComp and RVox, and a new output section with a small number of utilitarian capabilities which overlap DAW track strip functionality to a degree. The cynic might ask why bother since it would be easy enough to simply use RComp and REQ, or RVox and REQ, or even all three plug-ins in a channel insert, then use the SONAR's mixer facilities for such functions as phase inversion, panning, and gain riding.

Even if the individual modules within RComp provided no enhancements over their individual plug-in counterparts, though, there are a few potential reasons for choosing RComp. Perhaps the most obvious one is the convenience of having all basic insert and channel strip functionality in one tight user interface. Speaking of which, the highly vertical orientation of RChannel, as compared to the much more horizontal orientation of most DirectX plug-ins initially struck me as odd. After all, a PC screen generally has more horizontal space than vertical space. However, when actually using RChannel, it immediately became obvious that the vertical orientation was the right decision, as the long vertical dimension still easily fit my screen (I was initially using 1024x768 resolution on a 17" screen, though I've since upgraded to 1280x1024 resolution on a 19" screen), and the vertical orientation allowed me to have several instances of RChannel side-by-side on the screen, thus making it much easier to adjust multiple tracks in parallel for a more coherent mix.

A more subtle reason for going with RChannel over multiple plug-ins is that when routing audio between plug-ins, even if two plug-ins in a row function at a higher bit resolution than the DAW's insert bus, the audio bit-depth must be reduced to the DAW's internal processing bit depth (i.e. 32-bit for SONAR) by the first plug-in in line for handing off to the second plug-in in line. Within RChannel, though, any internal routing (i.e. between functional modules incorporated in the single plug-in), is at RChannel's higher internal bit-depth (i.e. 64-bit floating point under Windows DirectX). This provides significant additional headroom for the multiple internal stages of processing, and results in less potential for loss of information due to extra conversions up and down between bit-depths. One key benefit is RChannel's ability to prevent clipping, even when applying substantial gain within its equalizer section, without reducing sound quality, leaving any limiting, or fader-based gain reduction, until the point just prior to where RChannel needs to transfer its output back to SONAR's bus.

As for the various internal modules within RChannel, there are both enhancements and compromises compared to using the similar individual plug-ins plus SONAR's track strip:

RChannel's equalizer module provides up to four bands of EQ, versus up to six for REQ. It also does not provide the independent left and right channel controls available with REQ, and its EQ graph is smaller, and thus a bit tougher to use for fine adjustments, than that of REQ. However, in addition to the bell, shelf, and cut filters provided by REQ, RChannel's EQ section provides Waves' new resonant shelf filters. Waves calls the REQ-style shelf filters "analog shelf" filters, and notes that they have an asymmetric resonance overshoot, in the opposite direction of the boost or cut, before the shelf filter reaches its designated boost or cut. By contrast, the new resonant shelf filters have no overshoot for Q settings below 0.8, and have a symmetric overshoot resonance for Q settings above 0.81.



Essentially, this is delivering another flavor, and one that is similar to the shelf filters provided by other EQ plug-ins, such as Waves' own Q10. The additional shelf filter flavor, and its variable behavior with different Q settings, also extends the sound shaping possibilities from RChannel's four band EQ beyond what the same four bands of REQ could do, thus reducing the number of times you'll be inclined to reach for REQ over RChannel simply to gain an extra band or two.

The dynamics section of RChannel provides a compressor/expander based on either RComp or RVox, a downward expander/gate based on the similar functionality provided in RVox, and a limiter similar to that found in RComp. RChannel provides considerable enhancements, though, over what is found in RComp and RVox.

The most visible of RChannel's enhancements over both RComp and RVox, and perhaps the most significant enhancement in terms of sound-shaping potential, is the introduction of independent "sidechain" filters for both the compressor/expander and expander/gate sections. Instead of keying the compressor or gate of the signal to be processed, using the sidechain for either allows the respective processor to be keyed off another signal. What that signal is can vary with the specific source chosen as the sidechain.

Use of the Internal source keys the processor off the signal being processed, including any EQ processing from RChannel's EQ section if the EQ section is placed before the dynamics section in RChannel's signal flow, but after applying filtration to that signal (see below for more on the filtration possibilities). Use of the Pre-EQ source, when the EQ section of RChannel is placed before the dynamics section in RChannel's signal flow, keys the dynamics processor off RChannel's input prior to applying any EQ, but also allows filtering the signal that is used to trigger the dynamics processor. There is also an External source selection, which is intended to allow keying each dynamics processor off another audio signal altogether -- for example, keying the gate for a synth pad track off a percussive track to achieve that pulsating synth sound that is so popular in dance music. However, currently only the TDM version of RChannel provides a way to actually key RChannel's dynamics processor off another track, so this feature will not help SONAR users in the near term. Waves indicates that they plan to approach the various plug-in host developers, and will cooperate with any willing to add what is needed to support this feature, so perhaps there is hope for SONAR users in the future.

With respect to the Internal and Pre-EQ sidechain sources, RChannel allows filtering the signals with low-pass, high-pass, band-pass, and band-reject filters. Center frequency for band filters and cutoff frequency for cut filters is sweepable from 16Hz to approximately 21kHz. In band filter modes, a bandwidth control also allows varying the slope of the filter to pass or reject a narrower or wider range of signal around the center frequency. Being able to set different sidechain sources and filters for the gate and compressor is a nice touch since the compressor and gate are generally used to address different issues in the same signal, and this allows tuning their individual responses more flexibly than would a single sidechain for both components.

RChannel also provides a sidechain "listen" feature to allow hearing only the signal being considered by one of the two sidechains to the dynamics section. This is obviously fairly critical for tuning the sidechain to respond only to the appropriate portion of the sound, such as the sibilance in a de-essing application.

Moving into the meat of the dynamics section, there are two components -- the compressor/expander and the expander/gate. These components can be used together, or one or both modules can be disabled. Perhaps one way to summarize the differences between RChannel's dynamics section and either RComp or RVox would be to say that RChannel adds an expander/gate and sidechain to RComp, adds a sidechain and additional tweaking flexibility to RVox, and provides the possibility of having a standalone expander/gate with sidechain, all while maintaining the end-of-chain limiter to prevent clipping when the dynamics portion of RChannel is configured post-EQ.

The compressor portion of the dynamics section, if enabled, will be configured to behave like either RComp or RVox. The only visible difference between the two modes is that, when RVox mode is used, the compression ratio control is grayed out, and compression ratio is under software control, whereas in RComp mode, the user sets the compression (or expansion) ratio directly. Since RVox has no attack or release controls -- it uses settings chosen by Waves and specifically optimized for vocal processing -- this provides significant additional control, thus making RVox's compression curve usable for a wider range of sound sources. RChannel's RComp mode provides the full

range of control available in RComp, with the exception of the compression behavior (Electro/Opto) and compression character (Smooth/Warm) toggles, which, based on my listening tests appear to be preconfigured for Electro behavior and Warm character.

The expander/gate section of RChannel provides two modes. Expander mode provides downward expansion, with a gentle slope similar to that found in RVox's "gate", but with the addition of added controls to tune the maximum attenuation to be applied (Floor) and to govern the expander's release time (Release). Gate mode provides a true noise gate, where sound levels below the threshold will result in the signal's being clamped down to the level specified by the Floor control.

The final element of RChannel's dynamics section is its clip guard limiter, which is the same as that found in RComp. Note, though, that it only guards against clipping at the output of the dynamics module, and that only prevents RChannel from clipping if the dynamics module is placed after the EQ module in RChannel's signal flow. However, RChannel also provides a semi-automatic facility for guarding against clipping if its dynamics section is pre-EQ -- which brings us to RChannel's final section:

The output section of RChannel provides a Gain control, a Phase Invert button, and a Rotation control. There are also output level meters with infinite peak hold and a limiting indicator and clip counter.

When RChannel's dynamics section is routed post-EQ, the output level meters and limiting indicator function just like those in RComp. However, when the dynamics section precedes the EQ section, EQ changes introduce the possibility of causing clipping. To make it easy, and semi-automatic, to prevent clipping in this case, RChannel keeps track of peak levels in the signal, and, if any clipping would occur, clicking the clip indicator light will reset the gain levels to compensate. This is similar to the auto trim feature in REQ except that RChannel's facility will only reduce level -- it will not act as a normalizer if peak readings are below 0dBFS.

RChannel's Phase Invert button does exactly what its name implies -- inverts the phase of the signal passing through RChannel.

The Rotation control has a function similar to a panning control with mono sound sources. Its  $-45^\circ$  to  $45^\circ$  range may seem a bit confusing since  $-45^\circ$  is full left and  $45^\circ$  is full right when panning a mono sound, but the control you'd expect is there, even if much the same thing could be accomplished with SONAR's track panning controls. For stereo sound sources, though, RChannel's Rotation control is not the simple left/right balance control which SONAR's track panpot would provide in the same context. Rather it rotates the stereo image such that you still end up hearing both sides of the image from the original signal, with the balance between channels maintained, but the overall signal shifts, depending upon the rotation angle specified. Thus, for example,  $-45^\circ$  would put the entire "rotated" signal on the left side. This is much more natural behavior for addressing side-to-side positioning of stereo tracks within the overall stereo field, so I have a feeling RChannel will find its way onto most of my stereo piano and synth tracks in the future.

SONAR users considering looking at RChannel will, of course, also be considering separate plug-ins as noted above in the sections on RComp and REQ. In addition, they may be considering Wave Arts' popular TrackPlug channel strip. TrackPlug provides up to 10 bands of EQ, along with a dynamics section that includes a variable knee compressor and gate. Its compressor includes both peak and RMS modes, and also features auto make-up gain. It does not have compressor or gate sidechains, nor a peak limiter, nor does it include phase inversion or rotation controls. Whereas RChannel targets a vintage analog feel, TrackPlug leans more toward highly transparent processing. I tend to prefer RChannel's sound for most of my uses, though I recognize that this is a highly subjective area, and that different mix contexts can use different flavors. I also prefer RChannel's much more intuitive and efficient user interface, especially when it comes to making numerical EQ changes, where TrackPlug forces you to toggle through individual bands to get to the one you want.

## Wrapping Up

Each of the plug-ins in Waves' Renaissance Maxx bundle holds its own nicely with any competitive plug-ins out there in its particular area of specialty. While Waves' pricing scheme doesn't make it terribly cost effective to consider purchasing these plug-ins individually, the per-plug-in cost within the RenMaxx bundle is much better, and reasonably competitive when you get down to street price. Thus, any SONAR users who are looking for a general upgrade for their basic set of plug-ins, while also picking up functionality in a few new areas, would do well to give the RenMaxx bundle a test drive. Just don't say I didn't warn you about the potential damage to your credit card balance!

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