

Stereo Lab was originally called Stereo Sauce.
The software was renamed from Version 2

Saucy sound

Noel Keywood tries out a software programme that manipulates stereo in many different and intriguing ways.

Rather than think its best to explain the name Stereo Sauce to let you know what this review is all about. It's about 'stereo' meaning traditional two channel music, whilst 'sauce' is a play on words. It means two channel is the source, whilst this programme turns it into sauce – meaning a complex concoction! Get it? If you don't – don't worry. I had trouble too. Stereo Sauce is a bit of a brain teaser, not only in its name but in what it can do. But it is fascinating and fun.

This computer programme from Pspatial Audio (<http://pspatialaudio.com>) can improve or convert stereo into many different forms. It turns headphone stereo into the sound you hear from a hi-fi in a room, it can convert stereo into surround-sound and it can modify or improve the stereo you get from LP, all through digital processing.

It does a lot more than this – and some of what it does is decidedly specialist – so I am going to describe only the more immediately obvious and attractive features of Stereo Sauce here, and leave some of the surround-sound, for example, to another time because it could fill a book.

And whilst I used Stereo Sauce successfully to ensure it works properly as described, the vinyl transcription function needs further review with special hardware. I will hopefully run through this again in more detail next month, if we get Pspatial's unique pre-amplifier in time.

The programme runs on Mac only, so PC users are left in the cold. Oh dear! It needs OS-X 10.7 (Lion) or higher, a multi-core Intel processor and 2GB RAM it is suggested. It comes in a number of differently purposed forms and



– importantly – there is a free fully featured demo version, limited by the fact that exported music files play for 2 minutes only. If you like what it does then there is a Home version for £29.00. There are also two 'pro' versions: Tonmeister and Audiophile, priced at £149.00 and £299.00 respectively – phew! This

will leave audiophiles gasping, so I will concentrate on the Home version.

Finally, to digitally equalise LP, as you can with Stereo Sauce, you need a phono stage without RIAA equalisation and such things don't exist, so a suitable phono stage is available – but this costs £2500. I will discuss this here, but review it in future.

Feature	Demo	Home	Tonmeister	Audiophile
FRANCINSTIEN FS1	yes	yes	yes	yes
Head Space	yes	yes	yes	yes
ARIA 51 (5.1 up-conversion)	yes ¹	yes	yes ¹	yes ¹
ARIA 20 (2.0 fold-down of ARIA 51)	yes	yes	yes	yes
RIAA correction	yes	yes	yes	yes
ANTI RIAA correction	yes	no	no	yes
Other phono EQs ²	yes	no	no	yes
Groove	yes ²	no	no	yes ²
Perfect Groove	yes ²	no	no	yes ²
FRANCINSTIEN	yes	yes	yes	yes
Bride of FRANCINSTIEN	yes	no	yes	yes
QS Quadrasonic decode ³	yes	no	no	yes
SQ Quadrasonic decode ³	yes	no	no	yes
UHQ Ambisonics decode ³	yes	no	yes	yes
Blumlein 6 (Binaural transcode)	yes	no	yes	yes
Crossed cardioid enhancement	yes	no	yes	yes
Klanganwandler	yes	no	no	yes
Leq measurement	yes	no	yes	yes
Channel correlation data	yes	no	yes	yes
Track length limit	yes ⁷	no	no	no
Triangular PDF dither	yes	yes	yes	yes
Source sample rate	44.1 to 96kHz	44.1, 48kHz	44.1 to 96kHz	44.1 to 96kHz
Source bit depth	16 / 24 bit	16	16 / 24 bit	16 / 24 bit
Number of tracks	10 per filter	unlimited	unlimited	unlimited
Metadata detection	yes	yes	yes	yes
.WAV	yes	yes	yes	yes
Surround 6 channel files ⁴	yes	yes	yes	yes
Six mono files for 5.1	yes	no	yes	yes
Three stereo files for 5.1	yes	no	no	yes
.AIFF & .AIFF-C	yes	yes	yes	yes
.FLAC	yes	yes	yes	yes

This chart compares Home, Tonmeister and Audiophile options. Note that Home has been updated to 24bit processing.

To be clear, even when using this hardware phono stage, Stereo Sauce is all about manipulating computer music files, so if for example you want to use its digital equalisation function for LP you must first turn the LP to digital, then play it through the hi-fi via a digital file player of some description. This could be a streamer like the Cambridge Audio StreamMagic 6, a Naim UnitiLite, or in my case an Astell&Kern AKI20 portable player hooked up through its optical digital output. You could also play files off the computer through a DLNA ethernet link, or even a direct S/PDIF digital link if the computer is close to the hi-fi, or you have a portable laptop.

Before I go any further, here is a little background to put you in the picture. Pspatial Audio is the creation of Richard Brice, who has worked in audio, mainly on the studio side of things, all his life. Since this means in excess of 30 years you will find ideas in Stereo Sauce that go way back – unfinished technological business, as it were.

If you are under 30 years of age some of this is going to seem a tad mystical, and we will even be talking surround-sound as you don't know it: CBS SQ, Sansui QS and UH-J encoding, all of which dates back to 4-channel that appeared on LP in the 1970s.

But some of Richard Brice's concerns date back to before even his time, to EMI and stereo experiments carried out by Blumlein. Because Richard and I worked together before I started Hi-Fi World in 1991, I know where he is coming from in all this – and what he knows! He wrote a column for us in early issues and one of them, in the November 1993 issue describes Francinstien, whose functions now feature in Stereo Sauce.

Richard later went on to work with EMI on Sensaura surround-sound, so he has a long history in the business and is fluent both with recording technology and replay technology, especially top-end high fidelity.

Rather than list all the many functions available in each version, see the chart downloaded from the website, but this has now changed.

The Home version was limited to 16bit files, meaning CD quality, but this has now been changed to 24bit I am told. 16bit is not good enough to match the quality of a moving coil cartridge playing direct. Even current

24bit ADCs are noisy, but they get close to acceptable.

Testing for this review was done with the free Demo version so I worked in 24bit. Again, more of this later, because it can get very technical. I am looking mainly at the Home version here since, cost wise this is in most people's ball park.

The Home version has Francinstien, Head Space, Aria and RIAA correction. Audiophile adds in LP equalisation characteristics other than RIAA, Groove and Perfect Groove, Bride of Francinstien,

ripped from CD, or recorded from LP in the Home version.

Head Space is completely different to Francinstien. It imposes another process, that of the Head Related Transfer Function, onto the music so headphone listening sounds like listening to the hi-fi, meaning loudspeakers in a room. To be more precise, HRTF reverse compensates for the loss of aural ability you suffer when using headphones, because you cannot process inter-aural time delays, reflections from the shoulders or front/back positioning due to the



The Furutech Esprit preamplifier we used to convert LP to 24/96 high resolution digital. It fed a MacBook Pro via USB.

a swathe of old four-channel decode technologies and stereo enhancement. There is a Tonmeister version that omits some Audiophile features, as you can see in the chart.

HOME VERSION

The Home version shows the saucy side of Sauce: there is plenty in there

front/rear asymmetry introduced by the ear and used by the brain to determine front from rear.

Additionally, head space adds in a room acoustic, meaning reverb, of a typical studio control room it is said. Having been in many studio control rooms, I wince, but I suspect this is a notionally perfect one!



The user interface is stark, but simple. Add File at top left loads a digital file, you select a process then press the central Play button. The file is then altered accordingly – a new, updated version being generated.

and it is a rich mix!

Francinstien is a stereo image enhancer: it aligns the apparent position of high and low frequencies from singers and instruments across the sound stage, sharpening up image position. It is based upon psycho-acoustics, as is a lot of Richard's work. Francinstien works with files

So Head Space is all about headphone listening and will affect portable use. The idea is you process your music files through Head Space before loading them to the iPod (or whatever!) and they sound like your hi-fi.

Aria is where – technically – life gets very interesting. It is all about

up-conversion of stereo to surround-sound, as in Dolby ProLogic II, but it generates a surround-sound file only playable in a surround-sound environment, an AV receiver or multi-channel preamp.

There is Aria 2 however, that produces in-head surround-sound no less! I've had this explained to me in detail in the past by Richard and the psycho-acoustics of it are fascinating.

And finally there is the package's finest achievement or greatest horror story – depending upon your outlook. I think a lot of modern techies won't get it at all and it had me in a lather too. Stereo Sauce can digitally equalise your LPs using what Richard Brice claims to be a superior digital methodology better than that found anywhere else. The suggestion is that you can hear your LPs better than ever before, due to the wonders of advanced digital processing.

The horror story in here is that you must first record your LPs 'flat' – meaning without RIAA equalisation – and, for all practical intents and purposes, there is currently no way of doing this. So you must buy a flat preamplifier and this Pspatialaudio can supply for £2500, with digital output.

The Home version of Stereo Sauce offered only 16bit quality, which limits LP quality to MM (moving magnet) cartridges that have intrinsically limited dynamic range, due to the considerable amounts of noise they generate. This does not apply to MC (moving coil) cartridges that have almost unlimited dynamic range. But now that Home processes 24bit it can be used with the special preamp and MCs.

As you can see there's an argument developing here (as in technical discussion) so I will stop at this point and explain what I did and what you may be able to do.

I used our cartridge measurement preamp, something I designed and built long ago, that has no RIAA equalisation (because post-equalisation is used to match that necessary for commercial test discs). It's output was fed into a Furutech Esprit preamp, via Line 1, that has an on-board 24/96 ADC.

Digital from the ADC was then recorded onto a MacBook Pro via USB, using the Audacity music editor. This set-up worked perfectly with

our Ortofon Cadenza Bronze MC cartridge, mounted in SME309 arm on Timestep Evo SL-1210 Mk2 DD turntable.

I did try feeding the Cadenza straight into the Furutech and using the digital Amplify function



Francinstien in original hardware form.

in Audacity to bring level up but inevitably there was a lot of hiss. However, with an MM cartridge like our Ortofon 2M Black the hiss subsided to a reasonably low level. So although this is not an ideal way of recording LP flat (without equalisation), it does work, at least well enough to run basic checks using the free Stereo Sauce download if you wish to do so. Oh what fun!

I recorded Mark Knopfler's 'True Love Will Never Fade', from the LP Kill to Get Crimson, because it is well recorded and cut to 200gm flat vinyl. With no equalisation I got a sharp sound with excess treble and little bass; this is what to expect with RIAA missing.

Once this has been saved in WAV, FLAC or AIFF form (I used WAV) it is then loaded into Stereo Sauce using the Add Files icon, or you can drag-and-drop. The programme processes it into a new file suffixed -pa, and it is saved back into the originating folder unless otherwise specified. In use it's probably best to set up an 'SS Processed' folder or such like, so you know exactly what is in it, keeping processed files separate from originals, to avoid confusion.

What I got was interesting. Transferred to an Astell&Kern AK120 and then run through our office system comprising Oppo BDP-104D Blu-ray player with ESS Sabre32 DAC, Sugden FBA-800 Class A amplifier and Tannoy DC10 Ti loudspeakers, which is where I usually play the LP, the presentation was quite different to that I am used to, through an

Icon Audio PS3 valve phono stage. It was drier, harder etched and more specific across the mid-band, clean in treble and less full bodied and warm in the bass. It wasn't the LP as I know it.

Because I used a special measuring preamp not designed for audio playback, I cannot make a definitive judgement on sound quality as yet, because my everyday analogue playback uses a valve phono stage whilst this digital system was all solid-state, and includes an ADC of course. Which is why I await the Stereo Sauce flat phono stage for a further review and will likely use an MC step-up transformer too. I have been told digital RIAA gives a different sound to conventional analogue equalisation and not everyone is happy it's better, but that's why Richard makes the point it isn't done properly, where in Stereo Sauce it is.

Processing this same digital file through Head Space did open out the sound on headphones and Aria 2 0 added a little depth, but then this depends upon what it can tease out of the original and I suspect the tack I used lacked out-of-phase data in the first place, being a modern very stereo-specific recording.

Also (via loudspeakers) I played 'True Love Will Never Fade' Stereo Sauce RIAA equalised, processed again through Bride of Francinstien to improve stereo imaging. If nothing else, this shows you how once a file becomes digital it can be processed in the most extraordinary fashion should you have the time and inclination, not to mention the computer power. The sound was focussed up as expected, at stage extremes.

CONCLUSION

Stereo Sauce was fascinating. It offers a lot of neat tricks that can be used to alter sound quality, on headphones and vinyl. The Home version in particular is good value, now it can process 24bit files. I suggest you give the demo a spin – and happy reading of Pspatial's website too!

NEXT MONTH

Next month we hope to be able to look more closely at digital RIAA equalisation of LPs, pending arrival of a flat preamplifier from Pspatial Audio.