EXHIBIT D

Julie A. Ahrens (NY SB No. 4167649)
Christopher W. Keegan, *pro hac vice*
Alice Garber, *pro hac vice*
KIRKLAND & ELLIS LLP
555 California Street
San Francisco, California 94104-1501
Telephone: (415) 439-1400
Facsimile: (415) 439-1500

David S. Olson (DO 4906)
STANFORD LAW SCHOOL CYBERLAW CLINIC
CENTER FOR INTERNET AND SOCIETY
559 Nathan Abbott Way
Stanford, California 94305-8610
Telephone: (650) 724-0517
Facsimile: (650) 723-4426
Email: dolson@law.stanford.edu

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK

RALPH VARGAS and BLAND - RICKY ROBERTS, Plaintiffs, - V. - PFIZER INC., PUBLICIS, INC., FLUID MUSIC, EAST WEST COMMUNICATIONS, INC., and BRIAN TRANSEAU p/k/a "BT", Defendants.	Case No.: 04 CV 9772 (WHP) ECF Case

REBUTTAL REPORT OF DR. RICHARD BOULANGER

I. INTRODUCTION

I have been asked to provide this reply report in the *Vargas v. Pfizer* litigation. My qualifications and expertise are presented in my original expert report and are not repeated here. To prepare this report, I relied upon the documents, audio files, and other items identified in Exhibit 1, including a copy of *Bust Dat Groove* from the Funky Drummer II album that was produced in the litigation in August 2006. Specifically, I reviewed the Declaration of Ivan Rodriguez and the deposition and expert report of Dr. Stephen Smith, both of which occurred in August 2006. I do not believe that anything in Mr. Rodriguez's declaration and exhibits, or Dr. Smiths' statements or report undermine my original analysis or opinion that *Aparthenonia* is unique and different from *Bust Dat Groove*. However, Dr. Smith's concerns are easily addressed. To that end, I provide the following additional analysis, which bolsters my opinion that *Aparthenonia* is unique.

II. ANALYSIS

A. Background: Comparison of Various Snare Drums:

One of the flaws with Dr. Smith's expert analysis and deposition is due to the fact that he has no experience with drums and no experience listening to, identifying, or distinguishing between different drum sounds. Supported by his textbook, it is clear that Dr. Smith has some expertise, experience and knowledge in the area of Digital Signal Processing, but his analysis and criticisms of my expert report and analysis, and his claims that were made without actually listening to the recordings, reflect a serious lack of musical knowledge, and his admittedly limited listening and performance experience with the very instruments that he is called upon to compare – a simple drum kit consisting of a snare, kick, and open/closed hi-hat. This might explain why he did not bother to listen to the recordings in the preparation of his expert analysis but rather just compared graphics from my report. We are talking about sounds here!

The other expert witness, Ivan A. Rodriguez does seem to have excellent experience with drums and drum recordings and with current studio and sampling technology, and I do think that he listened to the files before preparing his report. In fact, he reports that he "digitally manipulated" some of them to make them sound more similar. However, even to the untrained musical listener, it is quite clear from the isolated A-B audio comparisons prepared by Mr. Rodriguez and submitted as Exhibit C (tracks 1-4) to his expert report, that the individual drum sounds that make up *Aparthenonia* and *Bust Dat Groove* are different and unique. I think that these audio examples help me to prove the points made in my report.

The "rearrangements" that he makes of some of the elements in *Bust Dat Groove* is tantamount to tampering with the evidence to make them sound more alike! And as a result, I fell that these "digitally manipulated samples" raise serious questions about the claims he is making. In fact, the conclusions that he draws based on "flanging" are not technically correct at all! Juxtaposing with re-arrangements proves nothing. Except that he had to re-arrange and edit the materials to make them sound "similar" because they were not copies and so he made manipulated them for a better fit.

Like thousands and thousands of drum loops, both *Aparthenonia* and *Bust Dat Groove* are composed of the following three instruments (played from a standard drum set or drum kit) – – the kick, snare, and hi-hat (See pictures in Exhibits 2a, b, c, d, e, and f), but these loops were clearly made with a different kick drums, a different hi-hat sound, and different snare drums – as my research previously showed and as anyone can hear from simply listening to these recordings. Still, of these unique instruments, the one that does sound the most similar is the snare drum, but these similarities can be explained by the fact they are both tuned, equalized, and compressed in a similar fashion – they have similar processing. While showing clearly how these timbres and sounds are unique, I will show in detail below how these DSP techniques would tend to homogenize these source sounds.

1. Audio Comparison of Twenty Different Snares.

As listening is crucial and essential to understanding and recognizing these subtle but clear differences, I have prepared a set of audio exhibits. On the Audio CD, Track 1 features the *Aparthenonia* snare on the left "side" alternating with 20 different snares on the right.[1] On the Audio CD, Track 2 features the *Bust Dat Groove* snare on the right side alternating with the same 20 different snares on the left. Track 3 is the *Aparthenonia* snare isolated. Track 4 is the *Bust Dat Groove* snare isolated. Tracks 5 through 24 are the individual, isolated 20 acoustic (untreated) snare drums. These audio tracks correspond with the figures attached here as Exhibit 3.

2. Visual Comparison of Twenty Different Snares.

For my comparative analysis of these 20 snare drums, I use the Time Domain and FFT analysis methods described in my original report. All of the figures in Exhibit 3 show that even very different sounding snare drums share many similar temporal characteristics, spectral components and overall contours. In my opinion, any surface similarities between the snare drum sound in *Aparthenonia* and *Bust Dat Groove* are based on these inherent drum similarities.

Exhibit 3a through 3x show Time Domain comparisons (at different levels of scale and magnification) between the 20 different snare drums using the waveform view in Audacity. (Exhibit 3a is the *Aparthenonia* snare and Exhibit 3b is the *Bust Dat Groove* snare.) At different zoom levels, we can see that these figures show how very different sounding snare drums are very similar in contour and wave shape.

Exhibit 3aa through 3vv shows the Frequency Domain comparison (an FFT-based Spectral Analysis or View) of the 20 different snare drums. . (Exhibit 3aa is the *Aparthenonia* snare and Exhibit 3bb is the *Bust Dat Groove* snare.) Note how they all contain broad-band random high frequency energy, a strong pitched component, and a formant region in the midrange. The specific amount of high frequency energy will be determined by the size of the drum and the number and tightness of the snares below it, This size and also the material used to make the shell of the drum (metal, fiberglass, wood) contributes to the specific resonant or

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1 A "side" is one channel of audio, so the sound comes from only one speaker. Here, the left speaker.

formant frequencies in the midrange and also contribute to the overall duration or length of the tail following each drum strike. This "tail" is characteristically exponential, as shown in Exhibit 3a-x. Finally, the specific tuning, resulting from the tightness that the drumhead is stretched over the shell, will determine the location of the low peak and will correspond to the residual "pitch" of this complex timbre and appear as the low peak in the FFT analysis.

All of these 20 snare drums sound quite different, yet they share many temporal and spectral characteristics. In fact, a snare drum is a snare drum because of these very design characteristics, but one of the features that makes the *Aparthenonia* snare and the *Bust Dat Groove* snare sound so similar to the untrained musical ear is the fact that they were both close in pitch (but not at the same pitch).

3. Audio Comparison of *Aparthenonia* and *Bust Dat Groove.*

Track 25 on the Audio CD alternates between the *Aparthenonia* snare and the *Bust Dat Groove* snare. You can clearly hear that the *Bust Dat Groove* snare is at a lower pitch.

Moreover what makes them sound so similar to the untrained musical listener is the fact that they are both uncharacteristically non-acoustic and non-natural sounding. This is due to the fact that they are both compressed. Compression is a technique that alters the natural acoustical envelope (the exponential amplitude contour as show in Exhibit 3a-3x) by boosting the amplitude of a signal artificially when it is below a certain amplitude or threshold level.

B. Background: Audio Processing Techniques and Effect on Drum Sounds.

Exhibit 4a, shows how one of the compressor "plugins," found in Apple's Logic Audio Pro Sequencer, can be used to alter the amplitude of a signal and artificially "reshape" the sound making it artificially uniform in loudness. We see three tracks of audio – the *Bust Dat Groove* snare, with a dry Gretch snare alternating with a compressed Gretch snare on the track below it. Below that, we see three different compressor settings. This corresponds to the audio on Track 26 of the CD. On that audio track, we first hear the Gretch snare unprocessed, then we hear the unprocessed Gretch snare in the left speaker alternating with one compressed version of that very same snare in the right speaker (using compressor 1 settings), followed by another set consisting of unprocessed Gretch snare on the left and compressor setting #2 Gretch snare on the right, and finally we follow with a third set with using compressor setting #3 (from Exhibit 4a) with unprocessed Gretch snare on the left and compressed Gretch snare on the right. Clearly even an untrained listener can hear how compression can dramatically alter the quality of the snare drum.

The sound of compressed snare drums became very recognizable and characteristic of the popular music of the 80s and 90s. Dr. Smith is clearly unfamiliar with both these sounds and these recording and production techniques. Given that he does not know the sound of an acoustic snare, there is no way he would be able to differentiate between a clean and unprocessed acoustic recording and one that has been compressed. But in *Aparthenonia* and in *Bust Dat Groove* the snare drums are heavily compressed and it is quite understandable how it is easy for an untrained listener to confuse the sound of compression for the sound of the snare and conclude that they are similar when in fact, they merely have similar processing.

Track 27 on the Audio CD uses Apple's Logic Pro compressor on the Gretch snare to make is sound more like the *Bust Dat Groove* snare (which is also compressed.) Figure 3b is an audio example done in Logic Audio which compares the Bust Dat Groove compressed snare to an acoustic snare recording and then uses compression to make them sound more alike.

Similar EQ settings in the recordings also contribute significantly to these snares sounding alike. Exhibit 4b shows Apple's Logic Pro Matching EQ "plugin" (in the lower left corner) which will further homogenize the sounds by emphasizing certain pitches and pitch regions (formants).

Track 28 on the Audio CD is an example comparing the Bust Dat Groove snare on the left with a Compressed and EQ Matched Gretch snare on the right.

Since the snare drums in both *Aparthenonia and Bust Dat Groove* have been processed using compression algorithms that serve to enhance their inherent similarities. Exhibit 4 and the corresponding audio tracks on the CD (tracks 26 through 28) show how compression and EQ can make virtually any snare drum sound quite similar.

C. *Bust Dat Groove* is Digitally Assembled and Not Performed.

In addition to discovering and showing above that the snare drum in *Bust Dat Groove* is electronically treated and not purely acoustic, I also discovered that this 8 measure or 8 bar pattern is actually a 1 bar loop that has been copied and pasted end to end to create the 8 measures of exact repetition.

To illustrate that *Bust Dat Groove* is not a recorded performance, but rather, a single measure of music that is copied 8 times, in Exhibit 5a, I use the Arrangement View in Apple's Logic Pro Sequencer, to first line up measure 1 over measure 2 over measure 3 over measure 4. To further prove the point, I break the 1 bar pattern down into 10 events. Exhibits 5b through 5k lines up these ten events as they appear in each repetition of the loop. They are exact and in fact copies. To further prove that these are copies, I zoom in to the sample level in Exhibit 5l through 5o. Here one can clearly see that the audio files are exact copies. Exhibit 5l is the downbeat of bar 1. Exhibit 5m is the downbeat of measure 2, and so forth. These are perfect copies, humanly impossible to perform and produce, but simple to duplicate with a digital editor. In fact, the only way that this "live performance" could be this exact is if one electronically copied a short excerpt.

To show how interchangeable these copies can be, I have re-arranged the measures of *Bust Dat Groove* on the Audio CD – Track 29. Here I play the pattern in the following order: measure 1, 2, 3, 4 – silence – measure 4, 3, 2, 1 – silence – measure 1, 1, 1, 1 – silence – and for the finale I layer measure 1, 1, 1, 1 over measure 2, 2, 2, 2 over measure 3, 3, 3, 3 over measure 4, 4, 4, 4. Clearly, because this is a 1bar loop that is copied, it doesn't matter what order you play the pattern.

D. The Audio Evidence Presented in this Case as *Bust Dat Groove w/out Ride* is an Edited Version of the Original Funky Drummer Volume 2 LP Track

When comparing *Bust Dat Groove w/out Ride* to the original track from the *Funky Drummer LP*, I discovered that the upbeat had been deleted from the original pattern. Not only does this editing alter the "character" and "feel" of the groove, but it alters it in a way that it makes the track on *Funky Drummer Volume 2* sound more like *Aparthenonia*, when in fact it has even less in common with this pattern as presented in its original form on the LP.

Exhibit 6a shows the 8.5 measure pattern as it appears on *Funky Drummer Volume 2*. Exhibit 6b shows the edited *Bust Dat Groove w/out Ride* file juxtaposed over the track from on *Funky Drummer Volume 2* and we notice that in addition to chopping off the upbeat so that it would more closely imitate *Aparthenonia,* we can see that the fade-outs are different and have also been edited! In fact, we can see in Exhibit 6c, that *Bust Dat Groove* begins and ends with a brief silence, whereas *Aparthenonia* has no upbeat, no intro, and no fade-ins or fade-outs. Exhibit 6d shows the fade-in and out of the original LP track and Exhibit 6e shows how the fades and audio have been altered when presented as evidence and compared to *Aparthenonia* which appears in the upper left hand corner of the figure.

Let's listen to the original recordings and compare them. Track 30 on the Audio CD is taken from BT's 2 CD Set entitled: *Breaks From The Nu Skool* Disk B Track 45. Notice that the track begins on the beat and that it ends with a unique kick drum pattern in measure 4. Track 31 on the Audio CD is taken from: *Funky Drummer* Vol II Track 15. Notice the silence at the start, the fade-in and fade-out, and especially notice the up-beat or pickup leading into the pattern. Also, this track is 8.5 bars long in comparison to BT's 4 bar pattern with a unique ending. Track 32 shows us the edited and re-mixed version of the *Funky Drummer* track with a new 4 bar duration to make it more compatible with *Aparthenonia*, no up-beat (again to give a start that is similar to *Aparthenonia)*, and a new extended fade-out.

An interesting point in these comparisons is the fact that there seems to be more noise (surface noise, needle noise, and crackling from dust) in the *Funky Drummer* track (CD Audio track 31) than in the edited version (which was presented at *Bust Dat Groove w/out Ride*). But comparison of their noise spectra as shown in Exhibit 6f and even superimposing them, as in Exhibit 6g, show them to be identical. What is interesting and significant here is the fact that editing out of the up-beat had the psychoacoustic effect of de-noising the file and making it sound more like *Aparthenonia* which was created digitally. In *Bust Dat Groove*, since we do not hear the noise first as we do in the pickup of *Funky Drummer* when the needle drops on the record, then we merely hear the noise as a part of each of the percussion events in the loop. But when we hear the noise at the beginning of *Funky Drummer* we continue to perceive it as noise in the track.

Track 33 on the Audio CD is the needle noise from *Funky Drummer* and in Track 34 you can more clearly hear the surface noise and dust between the beats of *Funky Drummer.*

E. Dr. Smith's Criticisms and "Normalized" Analysis of *Aparthenonia* and *Bust Dat Groove.*

To address Dr. Smith's concerns about "Contrast", I Normalized the audio files and then redid all audio analysis using pure AIFF audio rather than encoded and decoded MP3 Audio. In doing so, I discovered even more clear differences between *Aparthenionia* and *Bust Dat Groove*. One of Dr. Smith's main criticisms of my report was that the amplitude of *Bust Dat Groove* was lower than the amplitude of *Aparthenonia*. Essentially, the two audio files were not originally recorded at the same level and *Bust Dat Groove* was not *normalized.* Since this drumloop was originally made for an LP record, this recording medium would not have the same *headroom* or *dynamic range* as a CD – the medium for which *Aparthenonia* was created. In my original report, I compared the original data without manipulation – I did not alter the data in any way. My original analysis showed that *Aparthenonia* is unique. Dr. Smith, after only looking at the graphics in my report, suggests that if the two audio files had been at the same amplitude levels (i.e. if they had both been *normalized* and the overall *gain* of *Bust Dat Groove* had been raised) we would be able to "see" more detail in the FFT analysis of that file and this more detail would reveal more "common" features. So, I am happy to alleviate Dr. Smith's concerns and *normalize* the files. Exhibit 7 is a complete set of the analysis from my original report, with the files normalized.

Furthermore, the original analysis was conducted on two audio files that were provided to me in the *mp3* format. Files in this format are reduced in size and optimized for transmission and delivery over the Internet. However, it is worth noting that the mp3 data reduction technique makes the files smaller by actually filtering out and removing both noise and psychoacoustically masked frequencies from the recording.

Exhibit 7a is a graphic that shows the stages involved in the mp3 encode/decode process. Although both files were put through the same encode/decode process, something of their substance and essence will have been removed in the process. For this rebuttal I was provided with full bandwidth AIFF files and so, in addition to *normalizing* the files before re-analyzing them, I also used files that were not encoded using the mp3 algorithm. Thus, they have more frequency content for comparison and their differences are even clearer to both the listener and the analysis software.

Tracks 35 and 36 on the Audio CD compare the AIFF and MP3 versions of *Aparthenonia* and *Bust Dat Groove.* In track 35 we first hear the AIFF version of *Aparthenonia* followed by the MP3 encoded versions of *Aparthenonia.* In track 36 we hear the AIFF version of *Bust Dat Groove* followed by the MP3 version. Although the MP3 algorithms are quite good and what they remove from the original audio is difficult, especially for the untrained listener, to detect. Careful listening on a good sound system or a professional pair of studio headphones will reveal timbre changes and noise reduction. These characteristics are more noticeable on the *Bust Dat Groove* drum loop because this original AIFF data had more noise and artifacts that would be "treated" and removed by the MP3 algorithm.

The analysis in Exhibit 7 is done on uniformly normalized and uncompressed AIFF files. All of these exhibits continue to support my opinion that *Aparthenonia* is unique and it has a

unique spectral signature. The analysis in Exhibit 7 followed the same protocol, using the same tools as described and set forth in my original report – *Logic, Audacity, WaveSurfer* and *Spear*.

Exhibit 7b uses WaveSurfer to compare the Time Domain of *Aparthenonia* with *Bust Dat Groove*. Notice here that even though the "rhythms," defined by the sharp peaks, have some events in common, they are unique and that *Aparthenonia* has more events in the basic pattern. (*Aparthenonia* is on top. *Bust Dat Groove* is on bottom.)

Exhibit 7c uses WaveSurfer to compare the pitch content in both drum loops. Notice that *Aparthenonia* (on top) has more discernable pitch.

Exhibit 7d uses the WaveSurfer spectrum view to compare the frequency content of the two drum loops. Clearly we can see that *Aparthenonia* has more high frequency content and stronger frequencies by the darker and bolder lines and by the number of lines in the upper display.

Exhibit 7e zooms in to show further spectral differences between the two files.

Exhibit 7f zooms in further and expands the view of the two spectra to show that they have unique contours.

Exhibit 7g overlays the two spectra to show further the differences.

Exhibit 7h shows the differences overlayed back onto the first spectral comparisons. At this high resolution and full bandwidth analysis, we can clearly see that these files are unique.

Exhibit 7i and 7j are text-file outputs of the spectral analysis so that one can pinpoint exactly the frequency differences without regard for the limited size of the display screen or the zoom factor of the visual display. This data shows that they are unique. In fact, all of the examples in Exhibit 7 show that *Aparthenonia* is unique.

F. Audio and Visual Comparison with Dr. Smith's Technique of Addressing Additional Frequency Content.

To address Dr. Smith's concern that I "did not account for the frequency content above 7 kilohertz (7000 Hz) in my analysis," I changed all the default settings of my analysis software to analyze the full frequency range of each drum loop. Again in doing so, I discovered clearer differences between *Aparthenonia* and *Bust Dat Groove*. Dr. Smith commented in his deposition and report that I had ignored the data in my analysis above 7 kilohertz. This is true. There were enough differences below 7 kHz for me to conclude in my previous report that *Aparthenonia* was unique and so I used only the default setting of my analysis programs to do my initial analysis and draw my initial set of conclusions. However, to address Dr. Smith's concerns, in Exhibits 8a – 8zzz I reset my analysis software to look at the full spectrum.

Exhibits 8a and 8b use *Spear* to show full frequency *sonogram* views of the Spectrum of *Aparthenonia* (8a) and *Bust Dat Groove* (8b). It is interesting to see in these examples how much more surface noise and dust show up "between the beats" (the peaks) on the *Bust Dat Groove* example (Exhibit 8b).

Exhibit 8c uses *Spear* to show the frequency content from 12kHz to 13kHz in *Aparthenonia.* Exhibit 8d uses *Spear* to show the frequency content from 12kHz to 13kHz in *Bust Dat Groove.* Exhibit 8e uses *Spear* to show the frequency content from 13kHz to 14kHz in *Aparthenonia.* Exhibit 8f uses *Spear* to show the frequency content from 13kHz to 14kHz in *Bust Dat Groove.* Exhibit 8g uses *Spear* to show the frequency content from 14kHz to 15kHz in *Aparthenonia.* Exhibit 8h uses *Spear* to show the frequency content from 14kHz to 15kHz in *Bust Dat Groove.*

In all these Exhibits the frequency content is different and the contours are different. In fact, *Aparthenonia* always has more high frequency data and more complex hi frequency content. This is particularly clear as we look at higher frequencies (from 13kHz to 15kHz as shown in Exhibits 8e – 8h). Even though we pointed out how there is a great deal of dust and surface noise in the Bust Dat Groove sonogram shown in Exhibit 8b, notice all the empty space in the focused *Bust Dat Groove* high frequency analyses (Exhibits 8f and 8h). This indicates that there is little high frequency content in this register, whereas there is much more in *Aparthenonia.*

Repeating the method from my original report, Exhibits 8i through 8zzz compare individual beats from both drum loops and look at both the straight FFT spectrum and the Enhanced Autocorrelation spectra. Even at full bandwidth, as recommended by Dr. Smith, each Exhibit clearly shows that *Aparthenonia* is unique.

On the Audio CD, Track 37 is 1bar of *Aparthenonia.* Track 38 is 1bar of *Bust Dat Groove*. Track 39 is beat 1 of *Aparthenonia*. Track 40 is beat 1 of *Bust Dat Groove*.

Track 41 is beat 2 of *Aparthenonia*. Track 42 is beat 2 of *Bust Dat Groove*. Track 43 is beat 3 of *Aparthenonia*. Track 44 is beat 3 of *Bust Dat Groove*. Track 45 is beat 4 of *Aparthenonia*. Track 46 is beat 4 of *Bust Dat Groove*. It is amazing to hear the differences in the music at just this beat level of subdivision.

Exhibit 8i uses *Audacity* to compare the Time Domain and Sonogram view of beat 1 from *Aparthenonia* (on the top half of the screen) to *Bust Dat Groove* (on the bottom half of the screen). Exhibit 8j focuses on the FFT of beat 1 of *Aparthenonia*. Exhibit 8k focuses on the FFT of beat 1 of *Bust Dat Groove*. Notice the different size, contour, and locations of the peaks in each of these files indicating different pitches, formants, and spectral content. These differences are even clearer when we compare the autocorrelation spectra of beat 1 in Exhibit 8l and 8m, and is even more apparent when we zoom in as in Exhibits 8n (*Aparthenonia* beat 1) and 8o (*Bust Dat Groove* beat1). There is no doubt that these are different and that *Aparthenonia* is unique.

Exhibit 8p uses *Audacity* to compare the Time Domain and Sonogram view of beat 2 from *Aparthenonia* (on the top half of the screen) to *Bust Dat Groove* (on the bottom half of the screen). Exhibit 8q focuses on the FFT of beat 2 of *Aparthenonia*. Exhibit 8r focuses on the FFT of beat 2 of *Bust Dat Groove*. Notice the different size, contour, and locations of the peaks in each of this beat indicating different pitches, formants, and spectral content. Comparing the enhanced autocorrelation spectra of beat 2 in Exhibit 8s and 8t, show us once again that beat 2 is different and that *Aparthenonia* is unique.

Exhibit 8u uses *Audacity* to compare the Time Domain and Sonogram view of beat 3 from *Aparthenonia* (on the top half of the screen) to *Bust Dat Groove* (on the bottom half of the screen). Exhibit 8v focuses on the FFT of beat 3 of *Aparthenonia*. Exhibit 8w focuses on the FFT of beat 3 of *Bust Dat Groove*. Again the different size, contour, and locations of the peaks in each of these beat indicates that they are composed of different timbres (i.e. instruments).

Exhibit 8x uses *Audacity* to compare the Time Domain and Sonogram view of beat 4 from *Aparthenonia* (on the top half of the screen) to *Bust Dat Groove* (on the bottom half of the screen). Exhibit 8y focuses on the FFT of beat 4 of *Aparthenonia*. Exhibit 8z focuses on the FFT of beat 3 of *Bust Dat Groove*. Notice the spikes in *Aparthenonia* and the smoother wide curves in *Bust Dat Groove*. They are clearly different. Comparing the enhanced autocorrelation spectra of beat 4 in Exhibit 8zz and 8zzz, show us once again that beat 4 of *Aparthenonia* features a number of clearer and distinct pitches that are not at all present in *Bust Dat Groove* and that *Aparthenonia* is different and in fact unique.

Just as in Exhibit 7, Exhibit 8 shows that there is not a single instance where normalizing the files and adjusting for their "contract and brightness," or looking at the frequency content above 7 kHz, as recommended by Dr. Smith, has not shown even more clearly and convincingly that *Aparthenonia* is unique.

G. Audio and Visual Comparison with Dr. Smith's Technique of Removing Spectral Data.

Dr. Smith recommends ignoring all data below 20dB in the FFT analysis. He claims that this is "just noise" and that it confuses the analysis. But in fact, drum sounds are made up primarily of noise. What makes them unique and gives them their unique character is the unique frequency content, bandwidth, location and quality of that noise. Ignoring the "noise" data (as Dr. Smith call it) below 20dB, tends to homogenize the sounds and throws out essential musical information. Quite frankly, I was surprised when Dr. Smith suggested in his analysis, (without actually listening to the files that had been provided, I might add) that it was appropriate to remove all the spectral data below 20dB down as a means of highlighting some spectral contours that were similar (but not "exact" matches or "direct" copies). Perhaps this suggestion was due to his lack of musical or recording experience and with his lack of knowledge of drum sounds. Because most of the critical "information," the very data that identified what was unique in these "sounds," was the very "noise" that he eliminated in his analysis.

Exhibit 9a, 9b, and 9c compare bar 1 of *Aparthenonia* with various degrees of precision in the analysis using the *WaveSurfer* Program. On the right is the full bandwidth spectrum, and on the left is a band-limited spectrum showing only 20dB of the signal. It is stunning to see how much "musical" information is lost in each of these comparisons. Visual proof alone might suffice to support my claim that you absolutely can't draw the conclusions that Dr. Smith draws when eliminating so much essential data, but the examples on the Audio CD will show just how absurd it is to ignore the "noise."

But furthermore, Exhibit 9d will show how a listening comparison and actually listening to the files (something that Dr. Smith did not do), is also essential for a thorough and expert analysis. Exhibit 9d shows the *Spectral Dynamics* algorithm in *SoundHack*. It is designed to

spectrally "Gate-Duck" (eliminate) all spectral data with an amplitude less than, in this case, 20dB from maximum. Track 47 on the Audio CD is an example of *Aparthenonia* with spectral gating applied as in Exhibit 9d. There is no way we could compare the sound of this to the original.

Exhibit 9e shows the "Spectral Gate" *plugin* in *Logic* that allows us to experiment with removing various amounts of spectral data in realtime. Track 48 on the Audio CD is an example setting the algorithm to remove -20dB in various frequency bands from *Aparthenonia* resulting in clear mutilations and degradations of the characteristic audio's identifying features. Track 49 on the Audio CD processes *Bust Dat Groove* with the same settings. Gating the spectrum and ignoring audio features below 20dB from max level is not acceptable in this case (or in any music for that matter). If your speakers sounded like this on your stereo or TV set, I would throw them out. By following Dr. Smith's suggestion we have been asked to throw out the baby with the bath water and find the baby in the suds that were left behind!

H. Additional Results from Further Analysis:

1. The snare drums are at different pitches

Although it is quite difficult, even for a trained musician, to recognize the fact that the snare drums in both drum loops are at slightly different pitches, when we compare them and listen to them alternate one after the other with the odd numbered strikes being the *Aparthenonia* snare and the even numbered strikes being the snare from *Bust Dat Groove*. Even an untrained musician that the *Bust Dat Groove* snare drum is slightly lower in pitch than the snare drum from *Aparthenonia*. They are different.

Track 50 on the Audio CD alternates between the *Aparthenonia* snare and the *Bust Dat Groove* snare.

2. The drum loops are at different tempos.

Although the tempo of both drum loops is very close. In fact they are different, and thus when they are played together they will go out of time and "flange" against each other – not, as reported by Mr. Rodriguez, because they are copies of the same data – which I have proven above that they are clearly not. *Bust Dat Groove* is at the tempo of 102.89 BPM and *Aparthenonia* is at 104. Track 51 on the Audio CD plays them simultaneously against each other with *Aparthenonia* in the left channel and *Bust Dat Groove* in the right channel. It is quite clear that they get off beat by the end of the four bars. At first they "flange" and then they go out of time and you hear extra beats that are not played together at all!

3. Zoom-in and you can really see the difference!

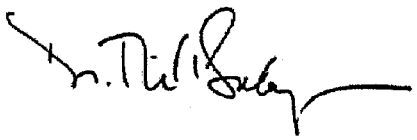
It is interesting to compare the drum loops side by side. They are quite different, but it is difficult to pin them down unless you are listening very carefully. Track 52 on the Audio CD plays *Aparthenonia* in the left speaker and follows that with *Bust Dat Groove (from the original Funky Drummer Record)* in the right speaker. Sure, with a little bit of editing and some tempo correction, they can be fit together (as Rodriguez shows and does) and once corrected, they can be substituted for one another (as Rodriguez shows and does and plugs his edited version over

the Celebrex commercial music!), but that does not mean that they are the same or that they are derived from each other in any way. Let's zoom in a bit and look carefully at how different they really are.

Exhibit 10a compares all 4 beats (1 bar) of *Aparthenonia* with *Bust Dat Groove* and at this level of scale they seem quite similar although careful inspection reveals some unique peaks and missing events. Exhibit 10b compares beat 1 of *Aparthenonia* with beat 1 of *Bust Dat Groove*. The differences are obvious. Exhibit 10c compares beat 2 of *Aparthenonia* with beat 2 of *Bust Dat Groove*. *Aparthenonia* is on top and notice here how *Bust Dat Groove* is already out of time and the third beat is creeping into the frame. Exhibit 10d compares beat 3 of *Aparthenonia* with beat 3 of *Bust Dat Groove*. Exhibit 10e compares beat 4 of *Aparthenonia* with beat 4 of *Bust Dat Groove*. Notice all the different information here! But when we zoom in further, we can more clearly see the huge differences between the waveforms. In Exhibit 10f we compare a little more than one beat with some obvious differences. In Exhibit 10g we compare just the first event and we can see that the waveforms are quite different. Finally, in Exhibit 10h we zoom in to the sample level and see that the waveforms are radically different. Different sounds. Different sources.

III. CONCLUSION

For all of the reasons set forth above, I do not believe that Dr. Smith nor Dr. Rodriguez's analysis shows that *Aparthenonia* and *Bust Dat Groove* are similar. This report, given to rebut those allegations further supports the findings in my original report and further show that *Aparthenonia* and *Bust Dat Groove* are unique and different drum loops.



Dated September 21, 2006

Dr. Richard Boulanger

Julie A. Ahrens (NY SB No. 4167649)
Christopher W. Keegan, *pro hac vice*
Alice Garber, *pro hac vice*
KIRKLAND & ELLIS LLP
555 California Street
San Francisco, California 94104-1501
Telephone: (415) 439-1400
Facsimile: (415) 439-1500

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF NEW YORK

RALPH VARGAS and BLAND - RICKY ROBERTS, Plaintiffs, - V. - PFIZER INC., PUBLICIS, INC., FLUID MUSIC, EAST WEST COMMUNICATIONS, INC., and BRIAN TRANSEAU p/k/a "BT", Defendants.	Case No.: 04 CV 9772 (WHP) ECF Case

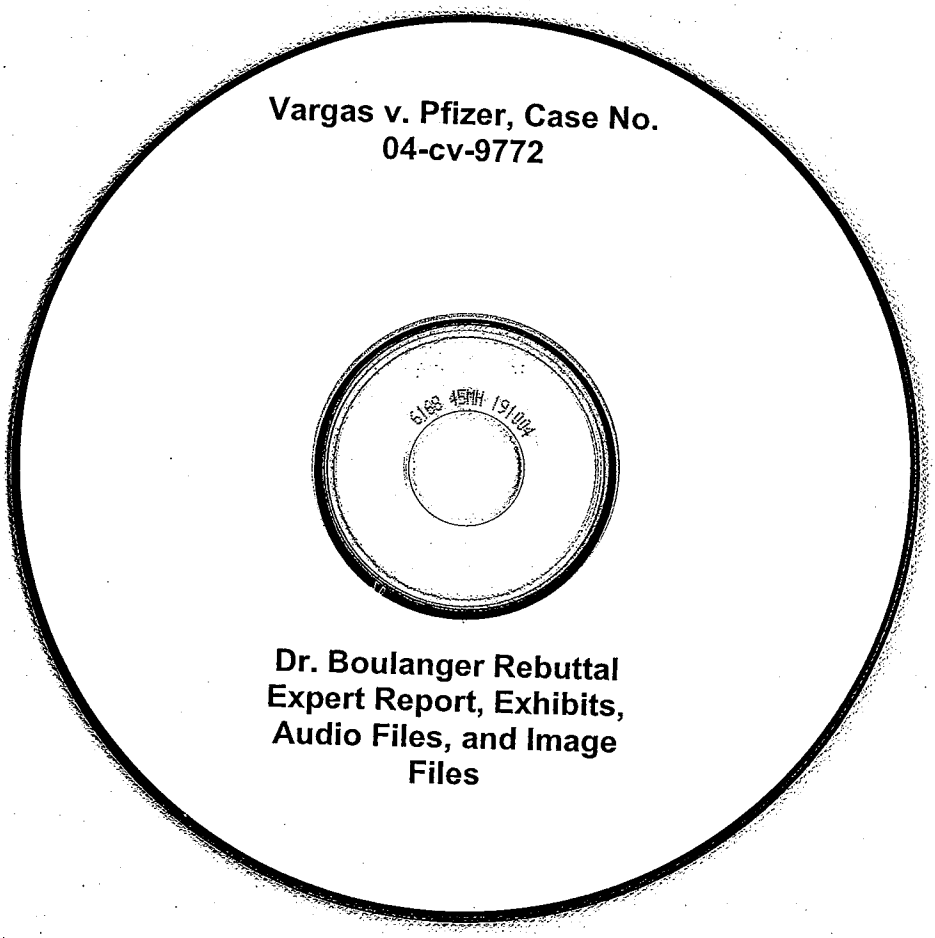
REBUTTAL REPORT OF DR. RICHARD BOULANGER

Exhibit 1: Documents and Materials Reviewed

In preparation for my rebuttal report, I reviewed all of the materials specifically identified in my rebuttal report, as well as the following materials:

- A CD of the Funky Drummer Volume II album,
- The unaltered version Bust Dat Groove from Funky Drummer Volume II,
- Ivan Rodriguez's Declaration with all exhibits,
- Breakz from the Nu Skool CD,
- Deposition Transcript of Dr. Steven Smith,
- Dr. Steven Smith's Expert Report,
- Deposition Transcript of Ivan Rodrigeuz.

These materials were in addition to the materials I reviewed for my original expert report and identified therein.


Vargas v. Pfizer, Case No. 04-cv-9772
Dr. Boulanger Rebuttal Expert Report, Exhibits, Audio Files, and Image Files