



ACOUSTIC SYSTEM *Revisited*

Reviewer: Srajan Ebaen

Source: Zanden Audio Model 2000P/5000S; Opera Audio Reference 2.2 Linear; *Raysonic CD128* [on extended loan]

Preamp/Integrated: ModWright SWL 9.0SE; Music First Audio Passive Magnetic; Bel Canto Design PRe3; Wyetech Labs Jade; *Supratek Cabernet Dual* [on loan from owner]; *Melody HiFi I2A3* [on extended loan]

EQ: Rane PEQ55 active merely below 40Hz

Amp: 2 x Audiosector Patek SE; Yamamoto A-08S; FirstWatt F3 & F1; Bel Canto e.One S300; Eastern Electric M-520; Yamamoto HA-02

Headphones: AKG K-1000 w. hardwired Stefan AudioArt harness; audio-technica W-1000

Speakers: Zu Cable Definition Pro in custom lacquer; Anthony Gallo Acoustics Ref 3.1; Mark & Daniel Ruby with Omni Harmonizer

Cables: Zanden Audio proprietary I²S cable, Zu Cable Varial, Gede, Libtech and Ibis; Stealth Audio Cable Indra, *MetaCarbon* & *NanoFiber* [on extended loan]; SilverFi interconnects; *Crystal Cable Ultra complete wire loom* [on extended loan]; double cry'd Acrolink with Furutech UK plug between wall and transformer

Stands: 1 x Grand Prix Audio Monaco Modular five-tier

Powerline conditioning: 2 x Walker Audio Velocitor S fed from custom AudioSector 1.5KV Plitron step-down transformer with balanced power output option

Sundry accessories: GPA Formula Carbon/Kevlar shelf for transport; GPA Apex footers underneath stand, DAC and amp; Walker Audio Extreme SST on all connections; Walker Audio Vivid CD cleaner; Walker Audio Reference HDLs; Furutech RD-2 CD demagnetizer

Room size: 16' w x 21' d x 9' h in short-wall setup, with openly adjoining 15' x 35' living room

Review Component Retail: In euros - Basic 200; Silver 375; Gold and Special Gold 925; Platinum 1,695. Contact for exact pricing due to fluctuations in the material's market price.



designer Franck Tchong

Audio Exotics, Hong Kong
show room treated with Acoustic System devices

Franck Tchang of Acoustic System Int'l has played the guitar forever. He is fascinated by harmonics, tone, modes and composition. He's also a trained and practicing goldsmith. Add those two passions and you arrive at his mindboggling acoustic resonators. Those are tiny metal bowls riding atop a trident cradle whose shaft is embedded in a grain-oriented, well seasoned soft or hard Maple wood sliver, with the bowls made from copper, silver, gold or Platinum alloys like Japanese or Tibetan singing bowls, winged protrusions added like an inverted Wagner warrior helmet. Once I tell you that these devices alter a home's acoustic ambience regardless of whether you listen to music or not -- Caelin Gabriel of Shunyata Research has used 'em in his meditation room for years and Franck just tuned a Yoga teacher's professional facility in Paris-- you'll appreciate how the concept that underlies these patented inventions is a bit different from classic textbooks on acoustics.

If you've ever played a system loud enough to get slightly noxious -- not because your ears clipped but because the pressure build-up in the room made you feel like swimming through molasses -- you're already keyed in to what the resonators address. All enclosed living spaces are filled with air. Once agitated by sounds, they create unequalized pressure zones. In Franck's view, pressure equates to damping. Lower frequencies will overdamp higher frequencies. When finer energies cannot expand freely because of interference from longer wavelengths, compression occurs. That's equivalent to *acoustic stresses*. Simultaneously, the low frequencies create resonances. Those alter tonalities depending on the physical construction of the room.

According to the inventor -- though he speaks 7 languages, English isn't his first so certain terms may not be the precise equivalents of his mother tongue -- his resonators decompress air pressure zones to act as acoustic *equalizers*. The density of his alloys is given as 10.5 for the silver and basic cups. 15.5 for the gold and gold special versions and 21 for the Platinum. Higher density translates to "higher tension, less pressure". By activating the passive resonators through air excitation in a room -- this needn't be done by loudspeakers but could be from refrigerators, air conditioners, heaters, traffic noise and all the other constituent of the background din that so plagues modern city civilization -- the damping factors for different frequencies are altered and some of the excess energy in the room is neutralized.



The resonators also become focal points for intense overtone radiation. That is denser at their points of origin than in the surrounding air. As directional organs, our ears key into these radiation sources and our acoustic perception of the space we're in is altered. Again, no music needs to be played to sense this spatial overlay. Speech will do, or the sound of our own foot fall. Being completely passive, the resonators can only be activated by received energy. As HF modulators, a full-range input obviously isn't needed. Franck Tchang has used a spectrum analyzer to corroborate this action up to 3GHz. By affecting the ordinary acoustic damping through adding parallel values from the resonators, original HF content reappears. It becomes audible again and rebalanced against the LF energies. Treble decays improve and the subjective impression of audible space deepens. The resonators equalize air pressure differentials and can be installed in a fridge, mailbox or outside a room. Distance will *not* affect their efficaciousness. That's quite a fatal blow to common sense but there it is according to the maestro. Franck has treated recording studios, performance venues, bars, living spaces and entire buildings. His demand as an expert tuning maestro is growing. That brings to mind Combak Corp.'s Kiuchi-San who enjoys a similar reputation in Japan.

Wannabe rocking chair engineers naturally cry voodoo while viewing Tchang's devices from a safe distance. They'll chuckle over how easily audiophiles are bamboozled by strangeness in their search for holy grails. Publishers are scared to broach the subject lest they look idiotic. It's far safer to wait and board the band wagon when the throngs behind it have gotten long. Ex-NSA scientists like Caelin Gabriel meanwhile enjoy the technology and its benefits quietly. While their exact workings may be *klaussified* -- a humorous bow to Audio Aylum's resident witch hunter Klaus -- the results of these resonators are an open book to anyone curious enough to let personal experience be their guide. With Marja & Henk's earlier [review](#) as starting point (mandatory reading - the link opens in a new window so you can return to this text afterwards), recent experiences in [Hong Kong](#) provided the needed follow-up impetus to get *serious* about this fascinating subject myself. I contacted Franck today to request a sample set of resonators for personal experimentation in Cyprus. Think *virtual space kit*.



Meanwhile, our tireless Dutchies have helped organize a public demonstration for Mr. Tchang in Holland. It educated local audiophiles about these devices when applied and explained by the master. Our writers' subsequent visits to Acoustic System's Paris headquarters -- reciprocated by Franck who personally tuned their Rotterdam listening room -- have compounded matters. This warrants an in-depth follow up article. It'll report on the event and everything Marja & Henk have learned since they spent more quality time with Franck. Just as they did with the Nanotech Nespa, I'm merely following in their footsteps. I'll board their train to go along for the ride. The motto is, three commentators are better than two. *Stay tuned* never quite had this ring. One thing is already clear. Just as his firm's name Acoustic System implies, Franck's devices rely on a novel way to view and understand room acoustics. Only when that particular view is adopted will head sense arise - if you find that mandatory before embracing efficacious solutions that seemingly operate outside the accepted norm for now.

As for me, I intend to avail myself of Franck's offer to answer whatever questions arise as I begin to apply these resonators to my room to experience the journey from before to after first-hand. In Hong Kong, I was presented with *fait accompli* scenarios. This disabled true appreciation for the magnitude of transformation that the resonators rendered. Life is good on planet audio. There are mysteries to pursue, horizons to expand, sacred cows to poke, piles of dung to step into. Did I mention that Franck also makes component footers, platforms and audio racks? And that he is the codesigner of the Consensus Audio speakers? When this man refers to *acoustic system*, he's quite serious. He asked how many rooms my house had, how many hallways. Then it dawned on me that he was about to treat my entire dwelling. Did he need a sketched blueprint for that to formulate his plan of attack? No, just a mock up of the listening room. We'd fix that first, then address the rest of the house since anything done in the other rooms would affect the listening room and the permutations thereafter would be rather endless.

This kind of perspective puts one in a Feng Shui kind of mind, doesn't it? Acupuncture for acoustical energy flow. Viewing everything as fluidly interconnected. Setting up emitters of higher vibrations -- harmonics -- to counter-balance density and dissipate congestion. Having to consider things as a *whole*. As I began to think about the resonators in this fashion, something inside began to click, not in any kind of systematic empirical fashion but rather, in an intuitively sympathetic one. The kind that views human beings as temporary energetic standing waves pretending to be matter only (and what is matter but oscillating atoms of mostly empty space)? The kind that realizes that thoughts are things, with very real effects on physical matter - like our own bodies for example.

Franck would be engaged in remote healing of sorts. Based on the room sketch I submitted, I expected a starting pattern recommendation to apply his resonators. I'd then have to experiment and report back with as much feedback as possible to provide the master tuner with the information *he* needed to make subsequent recommendations, learn from my reactions to them and help me find my way through this unfamiliar terrain. Hell, I might even have to learn what to listen for, hone my sensitivity in areas I'd not paid sufficient attention to until now. At least that's what I imagined or wondered about. Let's find out what really transpires, shall we? Theory and imagination are poor substitutes for actual experience and hard results. Whether I'll *understand* what's going on is an entirely different matter altogether.

When I thanked Franck, for at his expense facilitating this *second* view at his products in our pages -- it's not a burden we usually like to place on a manufacturer -- he surprised me. "With great pleasure. You are the first editor to have the courage to write about the resonator in the fridge. XX is scared to death to talk about it. YY is still trying to figure out how to write this thing. And the French guys here are completely out of the loop! Maybe it's because I'm Chinese. Having grown up in Buddhist countries, I learned to live with the force, not against it. That's clearly apparent with the resonators' performance."

The man was saying that the effects of his inventions properly placed were dead obvious. Why then reluctance in the media to give 'em a whirl? What could possibly be juicier than to take an outrageous claim by the horns and debunk it in public? It'd be quite the show. Talk of the town, bright lights on the heroic dragon slayer, another con artist busted. If, on the other hand, the claims proved out -- in obvious fashion no less -- then one would have learned something even more valuable and done the audiophile community at large a great service. Either way, our gig is about reporting news. Acoustic treatments the size of the palm of your hand and just as shallow *are* news. A maximum of nine such devices per listening room as the recommended usage to minimally impact domestic decors - that's *news*. I just don't get the hesitation or reluctance. As a news hound, how could one possibly lose out? One should feel attracted to this topic like bees to honey or flies to shyte - however this story would ultimately unravel for each investigator driven by curiosity.



But back on course. The operative focus, as Franck put it, is "remembering that we're dealing with air". That puts it in place. Outside of a vacuum, *air is everywhere*. Every oxygen molecule is connected to every other oxygen molecule on the planet. It's the biggest circle jerk around. It immediately explains why resonators *must* have effects when placed outside the room. If you've ever dealt with acoustical consultant firms like Rives Audio on how to sound proof a room such that you can crank the shit out of your stereo while your toddler sleeps peacefully in the adjacent room, you already know how involved and expensive the cure can become. For starters, you must truly cut off any and all air exchange between that room and the rest of the home. Aircon ducts and heating vents, door and ceiling joists, door floor clearance and key holes, panel seams, in-ceiling light cans, electrical conduits - the list of sonic escape routes one must seal off tends to be a lot longer than apparent at first. Remember also that most seemingly solid walls are in fact quite lossy and permeable, especially at low frequencies where the bass could be louder outside than inside the room.

The moment you think *air exchange* where an entire building is submerged in, permeated and surrounded by air (except under the foundation of course), the picture begins to focus. That's how these resonators defy distance. They're equalizing the ocean of air that surround us, rechanneling certain turbulences, syncing up patterns. If you've got a massive geometry-induced pressure zone outside your house for example -- an area where gusty winds get trapped to apply structural pressure -- relieving this pressure *must* have an audible effect inside. It's all connected. The mind cracker is simply the clash of scale. Big pressure, tiny devices. LF issues, HF solution. That's where the mind hangs up. We've become conditioned to equate acoustic treatments with <300Hz attacks. That means bass traps. It means huge Helmholtz resonators as notch filters. It means giant absorbers and diffusors. Time and again we've been told that low frequencies require large devices to counteract. That's why Rives developed an elaborate in-ceiling address. The ceiling tends to be the biggest blank surface in a room. If high enough, you can hang in a faux ceiling and hide your monster traps in-between.



That'd be assuming of course that the resonators are LF notch filters. They're patently not. They operate exclusively in the overtone range like a tinker bell in a Christmas tree. The operative three words remain *free air exchange*. Sound propagates on air molecules and air is everywhere. Something so basic suddenly has implications that don't seem quite so basic. That's why our two words have suddenly grown to three.

Think about it. If you sound proof a room by sealing it shut, you *increase* its internal air pressures the moment music starts. You're effectively making the room *smaller* than it was before. That compounds the issue. It's out of phase with Franck's views. His isn't a brute force approach. It isn't about dominating and straight-jacketing nature. It's about helping

acoustical energies flow again. It's about dissipating clusters so that like water which always finds its own level, air pressures level out and equalize. This is a Franck response: "I view my room as a bass guitar body, the resonators like strings and the air movement as the player's hand." According to him and how far I can follow thus far, excess LF energy gets converted to HF radiation by making his resonators work. Work means getting them to oscillate. These devices are passive. They're not perpetuum mobiles. To keep ringing, the resonators must continue to consume acoustical energy in their environment. However, they're not drains. Energy isn't killed by absorption or damping (actually, heat conversion to be technically correct). Acoustic System simply *upsamples* energy from lower to higher octaves. Bass energy enters the resonators. They oscillate. The resonator in turn puts out harmonics. LF goes in, HF comes out. That seems terribly oversimplified of course. Doubters will point at the fixed resonant frequency of the tiny oscillator and wonder how things add up.



Regardless, the goal is to disarm LF pressure zones. Their deleterious damping on the natural propagation of treble data, *air* in audiophile speak, gets lifted. Some acoustic equilibrium is restored. The exact metallurgical composition and density of the metal alloys determines decay times and exact energetic conversion potential. Here's another Franckish aphorism: "If you need to break the air in a balloon, use a needle, not a hammer." Tchang views his resonators as needles that puncture pressure zones with minimal effort and maximum efficiency (whereas conventional absorption devices become hammers that add to the mess we're trying to clean up).

More Franck speak: "Against the force, create another force. Reusing the force for its own benefit is key." Sounds like Aikido where an attack isn't blocked but redirected to where it won't do harm - except to the attacker if you're violent or in real danger. "The resonators transform air (noise) into tension. Without this process, our bodies will absorb the tension. I think you will know what I mean by now." I was very curious about these sonic effects on the nervous system. My wife and I have a dedicated meditation room for our formal practice. We view meditation as a process of conducting and magnifying higher energies which then create a shift of perception in consciousness. Anything that could facilitate faster or more powerful access by minimizing disturbances or blocks would be very welcome. Creating peaceful space using Feng Shui is already part of our vocabulary. These resonators seem like another tool from that same tool box. Ivette's very excited - and mostly not about the audio applications. Granted, this isn't the sort of thing you expect to read about in a magazine called *The Perfect Sound* or *Ultimate Stereo*. Which is exactly why our publication's name lacks any tie-in with audio. We do get to talk about other stuff as well.

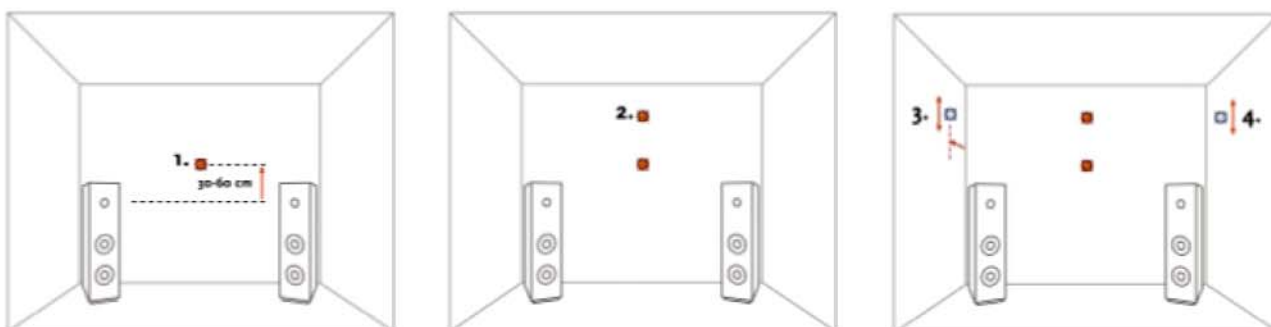
What kind of correlation would develop between cost and effect of applying these resonators? Let's face it, these devices aren't exactly cheap, especially the more precious metal variants. But then, the above Rives installation wasn't cheap either. It definitely altered the acoustics - I heard it. But not many melomanes are prepared to uglify their rooms

accordingly. Nor am I suggesting that Franck Tchang's system does the same thing. It appears to be the exact inverse in fact. Actual comparisons would involve erecting two identical rooms on a soundstage, then outfitting one with traditional traps, absorbers and diffusors, the other with Franck's thingmalings. Not a likely happening, not my focus today.



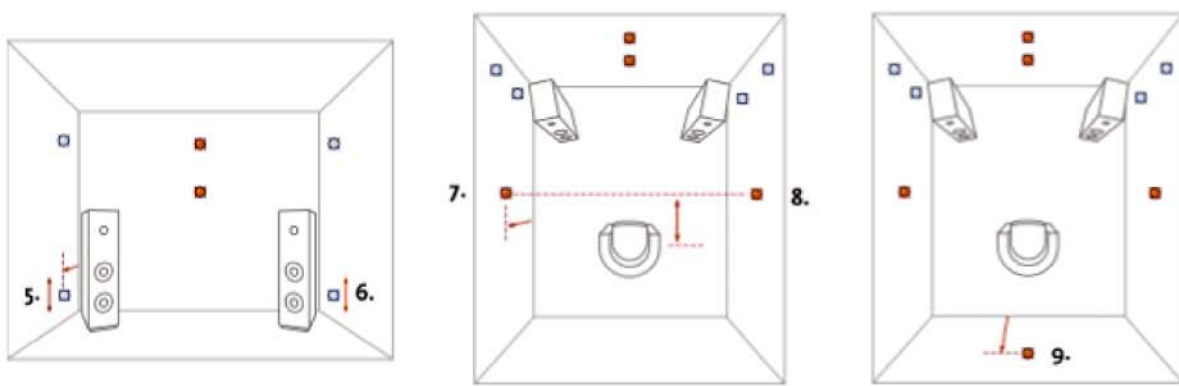
Now enter psychoacoustics or simply, how, even with our eyes closed, we perceive surrounding space. Our brain processes treble data of direct and reflected sounds. It uses the arrival time differentials to assess our body's position in three-dimensional space in relation to boundaries perceived by reflections. If one sets up HF emitters in a listening space whose customary first reflections as dictated by loudspeaker position have imprinted themselves on our ear/brain mechanism, imagine what'll happen when you set up fake first reflection points aka Franck Tchang resonators. As far as our bio computer is concerned, this new harmonic data gets processed just like real reflections. The result is that we'll hallucinate a different space than we're actually in. Franck calls it *virtual space*. It's about moving walls where our auditory perception is concerned. Audiophiles know perfectly well how it's the harmonic spray of recorded instruments reflecting off venue boundaries that are primarily responsible for the subjective illusion of hearing/seeing an acoustic other than the one of the room we're actually in. It's called hearing the recorded ambience.

It's readily intuitive that mapping out space with harmonic emitters sets up a fake ambience; that placing resonators higher or lower and exactly where will shift these vectors. Our perception of where we seem to be in relation to the sonic playback events will change. Our hearing apparatus gets fooled to hear spatial boundaries not where they actually are. Our eyes meanwhile aren't fooled and only notice the position of some tiny gizmos has changed. It'll be interesting to see how much larger my virtual listening space can be made to seem than its physical dimensions enforce; how the listener's subjective position relative to the soundstage can be altered.



Concluding conceptual introductions, it seems fair to say that the resonators serve two primary discrete while interlinked purposes. They're supposed to shift the audible balance of darkness and light -- as bass and treble energies -- by releasing certain pressure zones that are claimed to suppress the free propagation of *original* harmonic content. They also introduce secondary harmonic content (i.e. not on the recording) which, via deliberate though experimental placement of the emitters, can be used to define a virtual space and enhance the audio experience. Additional benefits reported by present users, especially inner city dwellers, include a systematic lowering of the ambient noise floor, i.e. serious attenuation of outside noises. Beyond these areas are additional -- possibly psychosomatic -- effects of enhanced well-being and better sleep as a result of lowered audible pollution. This points at non-audio uses by vibrationally tuning environments such that occupants simply feel more comfortable spending time in them.

And, you've got to keep an open mind as a comprehensive Acoustic System room tuning will involve placing some devices *outside* the room to seriously challenge your belief system. Franck doesn't pretend to really having invented anything. He prefers to call it a discovery which well preceded his subsequent attempts at understanding what was going on. He by now has much empirical data that help him apply his devices for the desired effects. In other words, his is a results-oriented discipline whose evolution co-developed an emerging viewpoint. Like Shaolin Kung Fu, the underlying perspective views things energetically. Chi, hara, conducting gravity, making organs smile - these are all core constituents of Eastern martial arts but I doubt Western science has yet found ways to measure them. Acupuncture works too but raises eyebrows with the hard-core test bench - um, *microscope* contingent. You see where this is going. Adds Franck, "I'm a very curious guy who needs to know how far a thing can go. I recognized a basic problem and made a tool to solve it, at least partially. When I made the first resonator, it was only for myself because my expensive audio system sounded like shit."



"I never had any commercial notions. I was very happy listening to just one silver resonator for six months. Then my curiosity awoke. I'm a jeweler and gold smith by trade so I made a gold, a gold special and a basic resonator, listening with one of them installed at a time. Then I made a big mistake. Platinum. I could never go back. Then I began to apply all of them together, trying to find the right positions, thinking deeply as to why and how this should work. Simultaneously, this same audio system began to sound beautiful. My friend told me to go commercial and I was tired of the diamond trade so I tried to get some French dealers or audiophiles interested. Nobody was. I went to the German show. In the first year, nobody even wanted to shake my hand. Do you know the dead fish handshake?"

"Except for one guy. Thomas Fast took a risk. Now he's very happy and three years later, everyone wants to shake my hand. I'm still fascinated by how these small simple devices can solve problems that the most sophisticated electronics won't but it was a really painstaking process to work out, to acquire the solid knowledge to make the best tool. I tried every size, every mixture, every position everywhere, to observe the performance permutations and not claim victory at the first shot. I made sure that every parameter resulted in harmonic harmony. And I've hit a brickwall. Up until now, I haven't been able to find the sixth resonator. Every time I tried, I was wrong. Perhaps it doesn't exist. Perhaps the five I have are the maximum. I'm the kind of person who thinks that I'm planting a tree today and maybe I don't have enough time to see it grow big enough for the next generation but I'll do what I can to help it develop to maturity." While I await delivery, you may enjoy reading this [preliminary test report](#) wherein the French Pro Links company was asked to measure and verify the operation of the resonators.

"My cousin is a Ph.D micro-mechanical engineer. He works in a university research department in Germany. He came to see me with a NASA-kind of software to do a simulation. I asked him to first listen and feel, not to music but to the difference of the room ambience with and without the resonators. I told him that if he couldn't hear and feel the difference, how would he know which parameter to key into his computer? These parameters are pretty complex. But many people who leave school with an advanced degree believe they know everything there is to know about their specialized field."

Was it possible to be a text book engineer and *not* hear the difference? Would it take a bit of time to acclimate and get sensitive to the changes - like having pointed out the ringing endemic to high-order loudspeaker networks which you never heard before but once identified, can never not hear thereafter? There are other factors at work as well. One user had reported that room temperature played an effect. Franck replied to my concomitant query that yes, air temperature does affect acoustic energy transmission. Temperature drops raise air density due to humidity and a bit of sonic compression results. "Just raise the resonator up by half a centimeter and everything should work fine again."

It's such empirically derived answers that could get Mr. Tchang into trouble. That's why the basic instructions for a set of 9 resonators don't mention the refrigerator or other seemingly outré applications. After all, it's taken three long years for his resonators to be taken just serious enough for a tiny bit of press. Plenty of resistance remains. Just how far things can be taken with this system is probably not something revealed in any formal instruction manual soon. It'll be for the adventurous to find out for themselves. The inventor will merely silently grin as feedback begins to arrive in Paris.

Just to throw a major curve ball, he did let on that the resonators are also electromagnetic receivers. "Their small size creates 'poles' but because the devices are passive, it takes time to set up the associated pathways. This explains the settling-in cycle during installation. Once the cycle has completed itself, electromagnetic energy in the room connects with the poles and the room is cleaned up. When a resonator is removed, the electromagnetic energy will try to reach another pole. If the original resonator is put right back, the established channel may still have an effect but if too much time passes, it'll have to be recreated again. If different resonators are swapped out from wooden base to wooden base a number of times, the electromagnetic field in the room will confuse and there'll be some audible compression by comparison."

Franck doesn't have his own website. He doesn't hawk his wares. You have to seek him out via e-mail. Very unhucksterish of him. If you really want to know, he'll warn you straight up that "with the resonators in place, you can control the air and cancel the walls in the house - virtually of course. After you treat the full house, you can adjust any one resonator in any room -- even the one in the fridge -- and bring the energy to a higher level. Or vice versa. Yes, you will have a strange feeling for a very short time but our body and mind adapt very fast. One thing is for sure. You cannot go back. No one can." *Terminally tchanged?* I was ready for my very own acoustic treatment though I was by now way out of my depth. But first,



Franck's personal speaker - prototype

Marja & Henk's further franckly unbelievable adventures

HVT Acoustic System resonator workshop

It takes courage to stick your neck out when dealing with something controversial in audiophile surroundings. After our initial article on the Acoustic System resonators, many postings on the various forums and message boards were negative. When we published the article on a Dutch website, the reactions were plain hostile and personal. Common to all forum participants, mailers and criticasters was the fact that *none* of them had ever seen the resonators in person nor listened to the effects in a room treated with these tiny bowls.

When we met Dutch HVT magazine's editor Theo Wubbolts and discussed the positive experiences we had with the resonators and the negative feedback over publishing our findings, he was immediately intrigued. Theo is not the person to jump on any wagon. He is the kind of man who thinks things through before reacting. His magazine HVT reflects his vision on audio. Music comes first. All the equipment is just a necessary means to bring the music to the listener. Theo in this respect is a typical Dutchman. Acting normal is strange enough. Why add to it with bizarre behavior? And now he wanted to know more about Franck Tchang's crafts. Hey, he asked for it. A brave and open-minded man he is.

HVT magazine has its offices on the premises of the well-known recording and post production company *Polyhymnia*, formerly known as Philips Classical. This location facilitates HVT with a dedicated and acoustically treated studio for its formal listening tests. The studio can seat up to 10 listeners. Some years ago HVT began to organize small regular weekend workshops in this studio. Readers of the magazine were invited to attend whenever something really special was on hand. The subject could be a novel recording technique, a very special set of equipment or something that would interest music lovers. Such a workshop was held three to four times a day, each time for a small group of attendees who had subscribed to the event. Admission is free and Theo provides coffee and tea.

To enable a group of people to get hands-on experience with the resonators, Theo Wubbolts offered to facilitate a workshop on the subject. We contacted Franck in Paris and Theo contacted the Dutch distributor of the resonators. Franck was interested and so was Rannel de Cock of RA Vision. A date was picked and in the next issue of HVT -- short for *Hifi Video Test* -- an ad was placed to alert interested readers about the workshop. When the date of the workshop arrived, over 30 persons showed up. Four groups were formed so every attendee was able to enjoy good seating in the studio.



RA Vision provided a system with Ascendo C7 loudspeakers, an Acoustic Signature turntable, behold CD player, behold PSD192 phono stage, behold APU768 preamp and behold BPA768 amplifier. The German electronics make for a complete digital system since the analogue signal of the turntable is almost immediately converted to 192/24 digital.

At the beginning of each of the four workshop sessions, music was playing while the attendees picked their seats. Theo very aptly chose Paganini's "La Campanella" with Salvatore Accardo on violin. Before the workshop started, Franck and Ranel had been sticking nine resonators to the walls of the studio, plus an additional diffuser. This meant that all attendees entered an already treated room. Franck did this since it is easier to experience a difference when you subtract rather than add something. Before Theo Wubbolts welcomed everyone, they had a chance to listen to Paganini's *little bell* to become accustomed to the room acoustic and system. Only a few of the resonators were visible, most of them hidden behind the curtains that line the walls.



Franck gifted Theo with a Special Gold resonator for his private listening room

After Theo's introduction of Franck, the designer started taking all the resonators off their wooden supports. Then he restarted "La Campanella", now in an untreated room. That is, the room as always treated by the Polyhymnia crew. The body language of every attendee was very clear. Everyone noticed the difference. From an open, light and very dynamic sound, the little bell now sounded somewhat muffled as though a blanket covered the musicians. From the reactions we'd overheard prior, we could make out that about 50% of the attendees were skeptic that the devices would work. The other half was just curious to learn more.

As Franck took to stage, he first explained that we do not listen to the system -- the equipment -- but to the *room*. To demonstrate, he hit one of the walls with his hand. Like in many treated listening environments, the walls are drywall on 2 x 4s with insulation between. His knock on the wall produced a dull sound. But a sound it was, not a no-sound. This, Franck explained, is what you hear when he takes off the resonators. You hear the room because it is too small to recreate the original room of the recording venue. *There simply wasn't room for the room*. At certain locations, the air pressure got too big and compression resulted. We all listen to the air that surrounds us. Air is everywhere as it should be or we'd die.

We need to remove the compression at key points. We need to intercept air pressures and create more listening space. With the resonators, we can control the listening space to mock up a virtual space that seems bigger than the actual room. The resonators do that by means of introducing their own damping factor as a result of the materials used to forge them, from the lowest density of the basic copper resonators to the highest in the pure platinum version. Low frequencies displace more energy than treble frequencies, hence the need for various materials with their dissimilar damping factors. They are all passive and only react to certain frequencies. Others will pass unattenuated.

The compression in room corners is high and overpowers treble energies. Franck talks of the air's own damping factor. Where high frequencies die out and are smothered in the corners, lower frequencies with their much greater energy will reflect and create the dreaded room boom.

Now, our demonstration facility at Polyhymnia was pretty big. Let's make it smaller. With the help of Rannel, Franck lowered the four highest resonators with their wooden supports. All wooden blocks are easy to attach and detach from the walls with a sort of blue tac. After the adjustment, the highest resonator on the front wall and the two on the sidewalls sat at about 1.60m instead of 2.20m. The second resonator on the front wall was now roughly 1 meter above the floor. As Franck explained, the top resonators made of gold have a rather high damping factor and control the height of the virtual room. With the virtual ceiling now lowered, more music was played. All attendees confirmed the subjective sensation that the room they listened to had vertically shrunk. Franck didn't like the sound and raised the block and resonator on the right side only. The virtual ceiling tilted and it was fun to see almost all attendees tilt their heads in response. This reaction said more than a thousand words.

Next the top resonator at the front wall was put back in its original location and the sound grew livelier. All this was done while the music played on. Finally the resonator at 1 meter on the front wall was raised to its original height of about 30cm above the tweeter. This simple move opened up the soundstage and the midrange acquired more *air*. With this change, all attendees began shifting in their chairs and looking at each other.



When all resonators had been put back in their initial locations, Franck addressed the listeners that sat behind each other in the center aisle. Only they'd be able to hear his next demonstration. He predicted that the center of the music would collapse and only hard left and right remain - "dual mono" just for three listeners. He achieved this by rotating the resonator behind the tweeters so that one of its wings was pointed at the listeners. Franck called this the *Closing Of The Window*. And the listeners admitted that they experienced a gap in the normal center fill. By turning the resonator again, the window was reopened and true stereo restored.

Just to give the listeners further impressions, Franck and Rannel removed all resonators once again and played more music before putting the resonators back on their supports. The differences were very apparent to all attendees. On a question why these small cups rest on the bigger wooden blocks, Franck answered as follows. Each resonator has its own damping factor as a result of the material used. Each wooden block is either made of soft or hard instrument-grade maple. He passed a block around and let us all knock on it. The block together with the bowl forms the resonator just like a stringed instrument where a wooden body and some strings connect through the bridge. With the Acoustic System resonators, the maple block is the body, the metal bowl the strings and the silver tripod the bridge.

Theo recently discovered a 45RPM Bert Kaempfert LP (Image Hifi LP007) with the song "A swinging safari" on it. In this song, the bass line goes really deep and is an ideal demonstration piece to see -- or better hear -- what resonators can do to low frequencies, a problem almost everyone battles. Once again, all resonators were removed and the Kaempfert track cued up. The room was filled with powerful bass - too much for the room. Or in Franck's words, the room was just too small. After adding the resonators back to the walls, the room -- with the same playback volume -- was now perfectly capable of supporting all the bass the Ascendos dished out.

With a smile Franck explained that your room is the real loudspeaker you listen to. The woofers and tweeters are just the mechanical means to push the air in the room. You cannot look at the air playing the music but you can see your transducers. So choose nice looking ones...

From the questions asked, the most common were two. A few listeners wanted to know if the resonators had to be visible to work. Franck explained that they are reacting to the air in the room, thus as long as there is air surrounding them, they work, even behind curtains, cupboards or doors. Next was the question of how many resonators are really necessary. Franck admitted that there is a real -- not virtual -- price to pay when all nine resonators are put to work to give optimal results. However, one can start with the most important locations by using just two resonators. Just put a basic copper resonator a few centimeters above the floor and a silver slightly higher than the tweeters on the front wall. This will smooth out the bass response, unlock soundstage depth and improve clarity and intelligibility of the music.

After four demonstrations to four groups of HVT readers, we confirmed that of 30-some participants, not one left with the impression that he or she had been duped or was the victim of a mass hypnosis. Even the most skeptical listener was convinced that what he heard and saw was real and repeatable.