ASoN Meeting – September 2011
Grover Notting Speakers

“A rose by any other name would smell as sweet” (Shakespeare)

Introduction:
What’s in a name? Some companies and products are named after a founder (Dell), some try to say what they are or do (Computercorp), some just try to be different (Apple). Others spend a fortune on market research to come up with a name that will woo consumers and somehow convince them to spend more. They don’t always get it right.
“Lifetsyle” is a popular series of pre-packaged stereo and home-theatre systems. But it’s also – wait for it – a condom. The first promises to deliver ultimate quality reproduction, whereas the latter promises to prevent it.

Grover Notting Code 4? At first I thought it was an action movie about a British super secret agent, starring my favourite Sesame Street character. (“The name’s Notting, Grover Notting, Agent Double 0 – how many days in a week? – 7”). If Classic Audio Designs simply opted to take the Grover Notting name from street signs, it’s probably because they have other priorities. It also conveys a certain humility – not a bad thing. (Actually they needed a unique name for Trademarks, I suspect in a hurry.)

But if I seem to be devoting a lot of space to discussing the name, it’s only because I couldn’t find much else to complain about. And in fairness, considering some other brand and product names, at least it’s straightforward to spell and pronounce.
It seems that every other day I come across a new player in audio. The question is, do they bring anything new to the table? Innovative design, improved performance, better value, increased functionality?

The decision by GN to launch a line of studio monitors as their first project is an ambitious one. Their target customers listen to audio for a living – in fact, they put it under the microscope, for many hours every day. In this space, it's not enough for a new speaker just to look sexy. (Oh gosh. Sexy speakers. I'm not well. Or I've been at it too long. Or both. Then again there are those B&W Nautilus 2's that I lust after).

But then the decision – more of a coup – to have the legendary Australian audio engineer Dr Neville Thiele involved in the design – is a master stroke. Neville lends his name – along with associate Dr Richard Small – to the Thiele-Small or TS parameters used universally to describe loudspeakers. In a nutshell, these allow the mechanical as well as the electrical characteristics of drivers (as well as enclosures, ports, etc) to be represented by electrical quantities such as resistance, capacitance and inductance. This in turn allows design and analysis to be performed using established and well-understood principles already applied to electrical circuits (in particular, filters). Prior to this, the design of loudspeakers was a much more experimental and repetitive process. Actually it was surprising some of them worked as well as they did.

All the GN models have a no-nonsense, let's-get-down-to-business, appearance. I really like the fact that they are simple rectangular boxes. No funny curves, no stepped baffles, no collection of multiple attached angled enclosures reminiscent of Stonehenge – which other designers deem essential. These are even made of regular MDF (compressed timber) – no miraculous space age composites here. It seems we are back to good old science, rather than alchemy.

One of the perils of an interest in "high-end" audio is the tendency to be taken in by the hype. I hate to admit it, but although I should know better, from time to time I have been swayed. These days, "white papers" are all too often produced by the sales department, rather than research and development. Often, these would be more at home in a Harry Potter novel than any scientific journal. Sadly, some belong in the bathroom. And not for reading.

How refreshing then to find a speaker that, from the ground up, simply "makes sense". The Audio Information Band I'd like to take a moment to discuss this, because GN places such emphasis on it in their presentations and literature. They rightly point out that for music, this frequency range is critical but needs to extend to about 11KHz, rather than the often quoted 300 to 3KHz, which is indeed a telecommunications standard. It is also referred to so often by speaker companies that it has become "speaker law" – in fact it is more correctly "folk lore". Not only does it have nothing at all to do with music or singing, but if you thought it was a minimum requirement related to intelligibility of the spoken word, you'd be wrong. It is actually a de facto standard resulting from the fact that early phone lines simply could not go beyond these frequencies – often, 2KHz wasn't even achieved. And in actual tests using standardized words and phrases, the intelligibility is only 75%.

Try differentiating “s” and “f” on a standard phone landline. (In an emergency, this can really matter!). (It takes at least 8KHz to fix this – reducing the number of users that can be accommodated in a given medium and bandwidth – optical fibre, radio, satellite – by about 3. Thus communications providers are unlikely to make this happen.)

But furthermore, speaker makers quote this bandwidth as a part of the audio spectrum that must be “pristine”, and therefore (they say) the midrange driver must handle this range without interruption. And then they set the crossover to 3KHz, apparently forgetting that due to the limited slope of the crossover, the tweeter will also be making a major contribution to the output in that “critical” band, and the two drivers will interfere.
If a speaker, and especially the crossover, has been properly designed, you can cross within this range, without ill effects. (Many cross below 2KHz). In fact, if you try to cross much higher, the physical placement of the drivers becomes much more critical, and can lead to other ill effects, and poor “driver integration”.

The GN’s absolutely shine, in my opinion, when it comes to driver integration – it is absolutely seamless (I have been lucky enough now to have heard them on many occasions, and I just cannot fault it in any of their models). Clearly, the crossover design is masterful! And on that topic, I have seen the actual crossover, and it is a complex and “no shortcuts” design.

The GN Power Plant
This renaming of the system component that we normally call a “power amplifier” is already a clue to the fact that GN has recognized the importance of synergy in audio systems (another of my many hobbyhorses). This product was designed specifically to match their speakers and user requirement. (Although it will work well with most speakers). Designer Hugh Dean of Aspen fame (a small Aussie amp. company with a dedicated following and a big reputation) has spent 10 years perfecting the technology that is the basis of this unit. He performed detailed studies of circuitry and component

behaviour, and their effect on the harmonic structure of distortion. He realized that this is more important than achieving the lowest overall distortion figures, and this explains why some amps with even 2% THD (total harmonic distortion) can sound beautiful, while some with .01% can be almost intolerable.

The resulting design is quite unconventional as a result – I don't want to give the game away, but it employs some ingenious techniques, and meticulous attention to detail. (This is not an amp. you could build – or fully comprehend - from the circuit diagram alone.)
The GN Bandwidth Extension Module - BEM. Most speakers these days are bass reflex. These use a port – a short length of tube venting the enclosure – to create a resonance (like an organ pipe or blowing across a bottle) which helps to boost bass. The GN's are all sealed enclosures, which while it limits the low frequency response, produces (in my view) the cleanest, most detailed bass there is.

The only downside to sealed systems is that in order to produce the bass frequencies, the driver cone has to move a greater distance (i.e. requires greater linear excursion capability) than its ported counterpart, because it's not assisted by the port. GN use a driver with a very long motor assembly and an "underhung" voicecoil – i.e. a short voicecoil in a long magnetic gap. This ensures that over the entire range of voicecoil (and thus cone) travel, the magnetic field is uniform, keeping the cone motion linear and distortion low. Wanting to "have their cake and eat it too", GN use a clever add-on circuit by Graham Huon to obtain the extra bass without compromising the very desirable characteristics of a sealed system. It is NOT a simple equalizing circuit, as this would have to cut the treble and mid-range, and reduce efficiency. Interestingly, one of the key components is a series capacitor. What??? Surely a series cap. reduces bass? After all, a cap's impedance increases as the frequency drops. And isn't that why amplifiers went direct coupled? The answer is counter-intuitive. A bit like the fact that blocking a port, whilst reducing the bass, actually increases – not decreases – the cone excursion.

In a nutshell, as the amplifier's impedance is very low, the speaker "sees" the capacitor in parallel, and this effects the resonant frequency and Q (resonance bandwidth or sharpness) which together are the main driver specs determining the lower freq. limit. Of course, extra components and very careful design are required to get the desired response.

The Meeting:
Naim CDX2 CD player
Nuforce P9 Preamp
AKSA (modified) Power Amp (prototype of GN power plant)
Listening - Session 1:
GN Code 4 – 1" tweeter, 7.5" woofer

Emperor Concerto #5 played by Eugeny Kissin (a masterful performance, as always)
Dave Brubeck/Gerry Mulligan
Porcupine Tree – Blackest Eyes from the album In Absentia
Rimsky Korsakov – opera – male vocal
Beatles – While My Guitar gently Weeps & Day in the Life
Steve Hackett – guitarist ex-Genesis Devil is an Englishman

While the speakers seemed to image well, and from my position – front row centre – disappeared, there was a strange distortion and ringing. It turned out that the right speaker was damaged, with a suspected tweeter fault. (The speakers had been on loan, and had been taking a pounding).

When we switched speakers to the little Code 1.5 – 1" & 5" - , and replayed a few of the above tracks, the ringing was no longer evident. I have to say, I really like the 1.5's. Just add a sub (if you must) for a magical home system. These punch way above their weight and are really good value.

Session 2:
Code 5 - 1" tweeter, 7.5" woofer x 2
Aside from a touch more bass over the Code 4 (probably would not have noticed if they hadn't told me) the overall sonic character and performance was much the same. This is by design. Aside from deeper bass and more power handling (i.e. louder), all Code speakers sound very similar.
Stockfish – guitars & vocal
Mary Black – vocal, guitar, bass, tomtom, accordion
Jennifer Warnes – Way Down Deep Janis Ian – Walking on Sacred Ground
Chopin – Etudes
James Taylor - Mexico
Casino Royale Soundtrack – Look of Love – Ella Fitzgerald

The speakers had good detail and great resolving power – as we would require from a monitor - and excellent bass articulation and extension, beyond what we might expect for their size, especially as they are sealed enclosures.
Conclusion:
I have been fortunate enough to hear the GN's on a number of occasions in different venues.
While I thought the GN's performed pretty well at our meeting, our infamous room did them a great disservice, because they are a very superior speaker, but at our meeting you could be forgiven for not being all that impressed. I hate the cliché of "I heard things I hadn't heard before" – it usually means distortion or that something is about to blow up, but in the case of GN, their speakers have

phenomenal resolving power. You really do get to hear right into the music. And they do it without fatiguing the listener. Images are also very detailed and stable.

As far as a monitor goes, mission well-and-truly accomplished.

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Comment:
In an age where price is king and success is measured in $$, it is great to see a company like Classic Audio Designs with a corporate mission that goes beyond profit.
There are much easier ways to make a living than designing, building and marketing speakers – especially in Australia (although you do get to play with some fun toys!)
When Frank Hinton talks about his company and its goals, his pride and passion appear to be at their greatest when he is talking about their efforts in the areas of environmental responsibility, keeping as much of the operation as Australian as possible, and in particular giving jobs (and self esteem) to those who, through no fault of their own, often find it difficult to gain meaningful employment.

Good on you, Frank! We need more people like you.

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I'd like to thank Frank and Julie Hinton of Classic Audio Designs / Grover Notting for the presentation and taking the trouble to transport a ton of gear to Sydney.

And a huge thankyou – THANKYOU! – to Dr Neville Thiele, for putting hype in its place, and reminding me why I studied electrical engineering (and still do). Thanks also to ASoN member Paul Bryant for a lot of organizing and transporting.

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Morris Swift