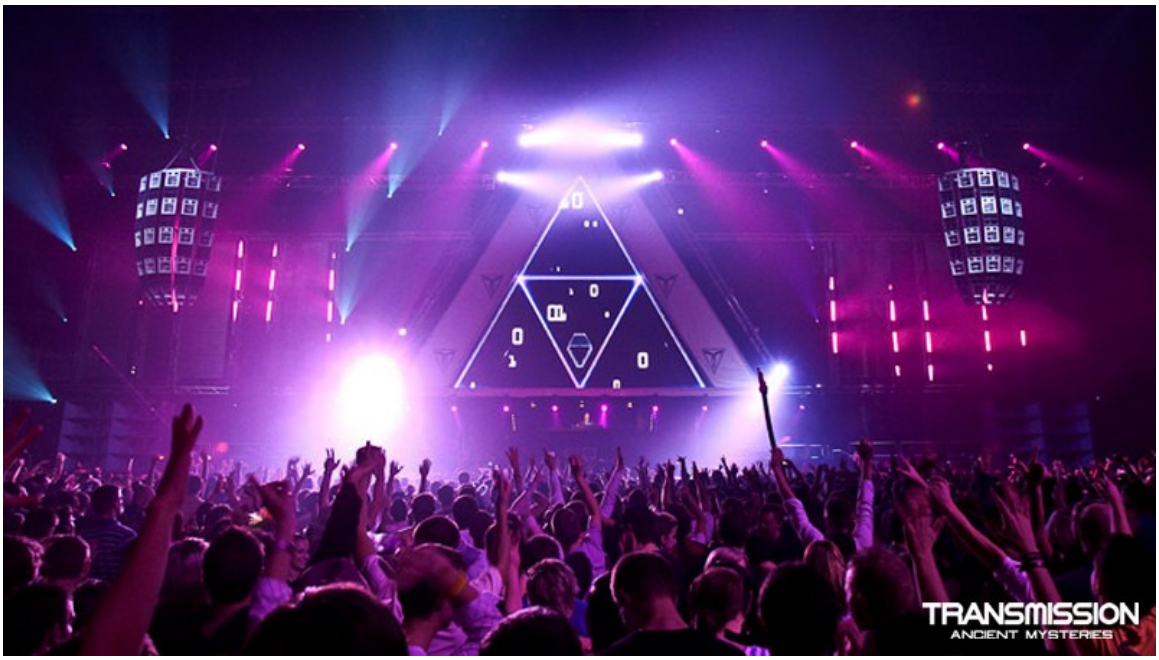
Funktion One's John Newsham Chats To I Like Music

Founded in 1992, Funktion-One was created by Tony Andrews and John Newsham, the duo equally responsible for the company Turbosound. With a passion for the research and development of high quality point source loudspeaker systems, Funktion-One can be found in clubs, venues and touring systems around the globe.

Having also pioneered the use of Ambisonic surround sound systems at dance events, their systems have been used by the Chemical Brothers, Underworld, Glastonbury Festival, The Glade Festival and many, many more.

I Like Music caught up with one half of the duo John Newsham, who not only pioneers Funktion-One but has been the Underworld sound engineer since day one. We chat about the unique approach of Funktion-One, how a sound system works with environmental noise restrictions, the development of Ambisonics and much more.

"I Like Music because… it makes the world go round!" JOHN NEWSHAM, FUNKTION-ONE



ILM: How did you get started in the business?

John: I was a musician to start with and I did an apprenticeship in electronics. I started tinkering with speakers because our band didn't have any. A friend of mine started a management business, he called me up one day and said "I have this band going on tour, I know you're good with electronics, can you come and help us with the technical side?" I'd never done anything professional in music before but I went along, got on ok and ended up after the first tour being the sound engineer.

ILM: You founded Funktion-One with Tony, how did that partnership come to be?

John: Turbosound came first, I met Tony in 1977. I was told by friends of mine "this guy makes amazing speakers; you need to go and listen." When I walked into his workshop the sound, instead of appearing to come from the speakers, was kind of coming towards me. It was as though the sound was hanging in the air between me and the speakers. It was a completely different thing, something I'd never experienced before. Something special was going on with these speakers!

ILM: And you began working with him straight away?

John: No not quite, but the next time the band I was working with went on tour, we hired one of his systems. We did a UK and European tour with that first system. It was a very flexible system with separate bass mid and high boxes that could be arrayed depending on the shape of the room; I did a lot of experiments with it. I'd walk into venues and say "OK. I'm going to try and set it up like this today." Then see what it sounded like. When I got back I told him about my experiences with the system and he started the process of refining the designs. Eventually we got together. My band were off the road to do an album and I didn't want to go back in the studio. I really liked the live side. Around about that time we set up Turbosound. Turbosound was the pre-cursor to Funktion-One.

Tony Andrews, John Newsham, Yann Favret and Toby Hunt – The Funktion One Team – 1992

ILM: What made you move from Turbosound and change to Funktion-One?

John: We were very successful with Turbosound in the late 70's and pretty much right the way through the 80's. We did things like the Pink Floyd tour, enormous gigs, loads of live stuff, Santana, Jackson Browne, Iron Maiden, Status Quo, David Bowie. Loads of big tours. The company grew and grew and we combined forces with BSS and started Precision Devices to make our loudspeakers. In the end it got a bit top heavy with too many directors. We ended up with six main directors and four of them decided they wanted to sell out. So Tony and I were basically left on our own! We stayed there for a while, then realised that it wasn't going to work, the new holding company was in trouble financially. So we split. Four of us from the Turbo R and D team started Funktion-One as partners and we've grown from there.

Festival System at Wembley Arena – Status Quo, 1979

ILM: What is it that sets Funktion-One apart?

John: We've absolutely stuck to the way we do sound. It was the same with Turbosound, it's the same with Funktion-One. There are a lot of facets to it. We always try to cover the main part of the frequency range, the vocal range, with a horn loaded cone loudspeaker.

ILM: And that's not normal for live sound systems?

John: No! For 99% of PA systems out there, that isn't true. Most of the sound, the mid-range and the upper frequencies, come from metal diaphragm compression drivers. A compression driver has a lot of intrinsic distortion. This is something

we knew in the 70's when we developed the Turbo. Turbosound was named after the mid range device, the turbo. It's a speaker on a horn with a kind of bullet shape in it. That mid-range device gives you clean, clear mid range that projects. It focuses the sounds and throws it across the room. You know when you're stood in front of a Funktion-One system.

ILM: Can you describe how?

John: It's really loud, but it's still sweet. It doesn't hurt your ears, it's not aggressive, it's not scratchy. It hasn't got that awful scratchy crashing sound that you can get with a big line array system running lots of metal diaphragm compression drivers in the midrange. If you hit a snare drum and it comes through one of our speakers, it sounds like a snare drum. It has a big fat sound to it. The sound of paper, which is what our loudspeaker cones are made of, is so much more natural than the sound of metal. If you take a piece of cardboard and rub your finger on it, you get a kind of soft sound; it doesn't ring, if you bang a piece of metal it rings. Metal has all this resonance in it; it's got its own sound.

ILM: So the standard is metal, but you use paper?

John: Yes. The compression drivers that they use in all the line arrays; two or four in every box, are maximum six or seven centimetres across. Those little tiny aluminium or titanium domes are thrashing away in those boxes, trying to make clear mid range but they can't do it. So the Funktion-One sound is mostly about cone loudspeakers horn loading and efficiency. All our stuff is horn loaded, our bass is horn loaded, our mid range is horn loaded. The cone mid-range is clean, efficient and clear with really low distortion. As well as the horn there's an axhead loading device which helps to control the sound dispersion, reduce distortion and increase HF output by reducing interference in front of the cone.. Because we're into horns, we're into point source sound. We don't do line arrays. We don't pile lots of speakers up in a big heap and say "if I pile lots up, it's going to get louder", because it doesn't.

ILM: Why isn't horn loading and point source industry standard?

John: A strange thing happened. Even though we did big live gigs like Pink Floyd and Oasis, you won't find a lot of Funktion-One sound systems doing a lot of big bands now. That's not because we haven't improved since Turbo Sound, we have. But suddenly we had these line array systems. It's like the Emperor's New Clothes. The first line array came along and got really hyped up and everyone said "Oh, this is wonderful." And then all the PA manufacturers copied it. Most manufacturers stopped making point source systems and horn loaded systems, we've ended up kind of out on our own.

ILM: What do the sound engineers say?

John: A lot of the engineers that I've known for a long time, people like Nick Hughes from Metallica, are saying things like "Sound systems are not working anymore. What's happened? We've lost the plot! Audio is going down the drain." One old friend said he thought his hearing was going till he used one of our systems and found the definition and clarity he'd been missing.

ILM: Have you tried the other systems?

John: I started mixing Underworld when they were a rock band, I mixed them when they had a drummer! I've been with them ever since, so I go all round the world with those guys and mix them on other people's systems. I am reasonably qualified to say what I feel about those other systems, I use them all!

ILM: You're Underworld's sound engineer! Amazing!

John: Haha! Yes, I'm actually a sound engineer and a system tech.

Underworld with Resolution 2s at their studio

ILM: Is it unusual for someone to work as both?

John: We have guys in sound rentals called system techs. They set up the system for the engineer that tends to work with the band, like I do with Underworld. In the old days, the sound engineer was his own system tech. You

had to learn how the sound system needed to be stacked or flown, how to wire it up, how to tweak it, how to operate it, you ended up with a very thorough knowledge of the workings of the system, its signal path and gain structure. Now you have an engineer, more of a white glove job, and a system tech who knows how to put the thing together and tweak it. So the two of them work together, and they kind of cross over a bit. Sometimes system techs mix sound as well. I think that's a good thing. That's what I am, I'm a sound engineer and also a system tech. I've spent such a long time doing it, I understand a lot about different sound systems.

ILM: What's the first thing you do with a new system?

John: I put my CD in and have a listen! Haha! Then I'm always pretty sure I know what I want to do to it, to get it into something that will sound reasonable for me, something I can work with. A lot of technology is used nowadays which is counter the idea of listening....

John Newsham with a large scale Funktion One system with Jamiroquai in Japan

ILM: Where can we find Funktion-One systems?

John: There's a lot of clubs in London. A good few Funktion-One rental companies doing stuff every weekend. Warehouse Project in Manchester is Funktion-One; Plan B in Brixton has just been re-installed with a new system. There are loads!

Plan B - Brixton

ILM: What have been some of your best moments as a sound engineer / system tech?

John: Underworld in the Roundhouse with the Funktion-One Res 5 system was definitely one of my best ever! The times at the Origin stage... Underworld on the Glade stage in 2009, I didn't have a good time with that actually, everyone said "That was fantastic!" But I struggled, sometimes you do, the mix riser was too high off the ground and I had to imagine what it sounded like on the ground in the people and try and compensate!

Underworld at the Roundhouse, Camden

ILM: Funktion-One is very prolific inside clubs, but you do maintain some very strong outdoor relationships, the Glade Festival for example?

John: That's a really good relationship. We do The Glade, both at Glastonbury and their own festival. Tony and I personally have done the Origin stage at Glade for the last four or five years, we also got more involved with the main stage in 2009. We've definitely got a soft spot for the earlier trance music, the more melodic stuff. Next door to the Glade at Glastonbury in 2009, we did an Experimental Soundfield which is an ongoing project for us combining the music we love and experiments Ambisonics and surround sound.

Experimental Soundfield – Glastonbury 2010

ILM: Have you stayed within dance music because you're fans of the genre?

John: We are but also lots of dance music people have followed *us*, because it's about sound. The live thing often seems to be more about looks, whereas the dance music thing is definitely about sound. People that go to clubs go back because the sound is good.

ILM: How bespoke is each system to each stage, each venue?

John: Mostly we pull in from standard product but we can also do bespoke stuff, we have the facilities to make specials and prototypes quite quickly. Funktion-One systems are very configurable. We're a favourite for people who have environmental noise problems. One of the things about horn loading is that you can point them where you want the sound to go.

ILM: How does that work?

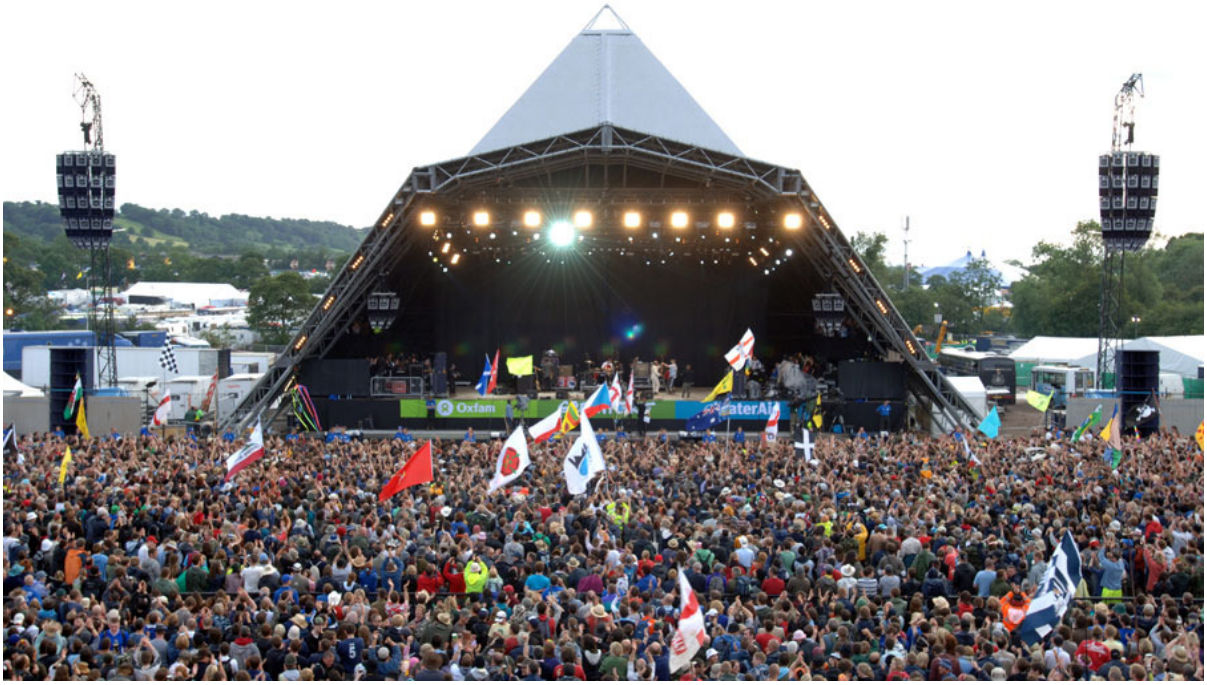
John: As long as your system is very directional, you can get it up high and aim it down at the ground and do a good job of containing it. In most conventional line array systems there is a set horizontal coverage, 60 degrees or 90 degrees, whatever it says on the tin is the width of coverage. When you put a big load of that up, a lot of the boxes at the top of the array are way wider than they need to be, so there is a lot of spill. This either bangs off the walls indoors and creates unwanted reverb and mushy sound or outdoors goes over and upsets the neighbours. Our Resolution 5 is a 20 degree box, so if we put three Res5s up we have a nice tight 60 degree coverage, which is plenty for long throw. Then we can go a bit wider in the near field so we can get more coverage down by the front of the stage. We can basically set the system up to give us the coverage we want.

ILM: How do you test the systems and measure the environmental impact, particularly within the hectic festival environment?

John: It's hard! Usually there's very little time. We put the system up and tune it to sound good, we use very little EQ on our systems if any. If there are environmental concerns, which there are at almost every festival now, we are told to run the system up to a certain level. Then our impact on the local environment is measured. They have people with noise measuring equipment at various houses or potential problem areas within the vicinity. The environmental noise consultants, who work with the local council, map your impact on the local environment and then tell you how loud you can go. They will set you a limit, say 98dBA or 100dBA front of house, which equates to 66 dBA at say Mrs. Smiths back garden. Then they'll have someone during the festival sitting in Mrs. Smiths back garden. If you go over 66 then they'll phone or radio in and ask you to turn it down.

ILM: You provided sound for the Glastonbury Pyramid Stage in 2007, but fell upon some problems. What happened?

John: We had some really weird weather. The sound was bouncing off the clouds, off a wet layer of air higher up. All the sound on the site was getting focused back over into the village. So in the village, the noise consultants saw the level go up and we were asked to turn it down. We had The Kooks on, and The Killers were about to come on. During the second half of The Kooks we had to turn it down a bit. We went from 99dBA to 96. That's a big drop in level, but they didn't measure any change in level off site! At one point we could clearly hear the Other Stage at FOH at the Pyramid...



Pyramid Stage – 2007

ILM: So did you turn it back up for the headliner?

John: No! They told us to turn it down even more. We ended up at 92 or 93which is far too quiet! People started shouting "Turn it up!" In my humble opinion, it was badly mis-managed. The band came off badly, people who paid their money got a rotten deal, and we came off badly. It was very hard for us to recover from that. We were told we would get another chance to do it, the year following, but we didn't. Unfortunately Michael Eavis wasn't informed of the weather issues, he was asked on live TV why the sound was so quiet for the Killers set and he said 'I'm sorry we're having problems, we've got a new sound system this year, maybe it isn't up to it.' That was just crushing. We had a lot of digging to do to get ourselves out of that corner!

ILM: But it wasn't like that for the whole festival?

John: No, the next night the weather was different! Although we'd decided to do it anyway, no matter what, we weren't going to be subjected to the same rules as we were the day before. After all, if you turn down and the level off site is not reduced then really you should turn up again because you are obviously not the source of the problem. With backing from the consultants, The Who played, and we were over 100db. It sounded fantastic!

ILM: It sounds like it was a case of over regulation. Perhaps due to more and more music festivals these days...?

John: Oh! Everyone has a festival down the road now. The whole thing is so much more controlled than it was. Twenty years ago you just turned up, put a speaker system up where you could, ran it as loud as you wanted then waited till someone banged on the door! I don't think control is necessarily a bad thing at all, in the past a lot of sound at gigs was way too loud, painful and damaging to peoples hearing. I believe we generally have better sound as a result of noise limits but the limits need to be sensible so that the audience who come to see the band get what they've paid for.

ILM: What's the future for sound systems?

John: We've done a lot of experiments with Ambisonics, which is a way of creating a sound environment, a 3D soundscape if you like. It's been developed for a long time. It was done by a mathematician called Michael Gerzon. The BBC actually broadcast in it for a while, it never really caught on but the Ambisonic thing is really nice.

ILM: Can you explain?

John: Using Ambisonics you can easily pan and move things in your mix around the soundfield. Unlike Dolby surround there’s no "front", so you have the same size speakers all round so the sound doesn't change as you pan it. The really interesting stuff starts to happen if you can record sound then replay it Ambisonically. Then you've got a whole different thing happening! A device called a soundfield microphone basically records the whole sound environment, so the direction of every incoming sound forms part of the sound. It's a beautifully slick way of doing it. You don't need lots of processing; you don't need lots of signal channels. With four channels of sound you can get a full 360 experience; up, down, front, back, left, right. Just four channels. It's so cool! Just look up Ambisonics on the web!

Ambisonics system at Glade 2008

ILM: Have you set any systems up in that way at parties or events?

John: Yes, we've done quite a lot of parties and dance music events using Ambisonic systems. The first was in the late 80s in a field out the back of Glastonbury with Underworld. It was called the Experimental Sound Field and was a very special event. There was a progression of it in The Glade area of Glastonbury Festival 2010, and there were also Funktion One systems at the Glade Stage, Dance East and Arcadia!