



Left to Right - Carlo Vicenzetto, Brandon (Audio88) and Michele Nebel

## Chario and the Science of Human Psychoacoustics

**Music brings people together** and for Chario, music was the bonding force that kept Carlo and Mario, the founders of Chario loudspeakers together for more than 35 years doing what they loved most – making music and bringing music into the thousands of homes worldwide for more than three decades.

Carlo Vicenzetto helmed Chario Loudspeakers as the General Sales Manager accompanied by Michele Nebel who takes care of Marketing and Communications were in town to visit their new distributor, Audio88. SPL! magazine met up with the founder and second-generation management of Chario to delve into the making of some of the world's most interesting loudspeakers. What a privilege!

SPL!: Let's start from the beginning...

Carlo: In my younger days, I used to play in a band with Mario. Back in the sixties, it is common for young musicians to play their music in 'caves', actually rented basement of private homes. Mario played drums and percussion while I was the band guitarist. We call our band – Chario, name after Mario and myself. Charlie is like a nickname for Carlo – so the first three letters of my nickname – Cha - and last three letters of Mario – rio - and it becomes 'Chario'.

Chario officially become a company in April '75 and we make a very unusual loudspeaker. Take a three-way loudspeaker, remove the their midrange drive units and put them in a separate box placed at the center, between the two speakers. We call this 'Selective Expansion System' or SES. This enables the speaker system to present virtual position of instruments - very holographic and 3-dimensional sound.

We demonstrate this system at the Milan show in 1976. A well-known English writer by the name of MacDonald who was blind declared the speakers 'a revolution' after he heard the demonstration. At that show, the distributor of Pioneer in Italy was so impressed with the speaker that he bought the system for his own use. Thereafter it began a long term relationship between Chario and Pioneer. In fact from '88 to '97, Pioneer was distributing Chario in Japan.

SPL!: This may have led to the development of the center channel for 5.1....

Carlo: Maybe. If not at least it contribute in some ways! We stopped the SES in '78, there are limitations in the SES, take for example an instrument like a piano has a wide range, many octaves. Then we have the problem of the sound moving from the speaker to the midrange center and then back to the speaker as the pianist scale the notes.

It was around this time, we got to know Mr Olimpo Tontini, who owns a speaker manufacturing company called SIPE – Società Italia Prodotto Electromechanic. Tontini allowed us to make use of all his facilities – anechoic chamber and all the measuring tools. The following year, Tontini invested in Chario and became the last partner for Chario. In all we have 6 partners and all remained with the company since they joined.

SPL!: Tell us about other innovations Chario has contributed to loudspeaker design?

Carlo: In 1980 we produce a 3-way speaker 'Chario Monitor' with a new kind of tweeter design that enable crossover at 2.5 kHz at 12 dB. Before

this loudspeaker, typical 3-way speakers crossover at 5,000 Hz or 6,000 Hz. After 30 years, today, many speakers follow this. With our latest T38 tweeter we take this one step further – this tweeter with a larger than normal diaphragm at 38mm, a tweeter diaphragm more than one inch in diameter, lowers the crossover to 1.2 kHz!

Chario loudspeakers are designed with human psychoacoustics as defined by the findings of Fletcher and Munson – the famous Fletcher-Munson 'equal loudness' curves in 1937. Our ears perception of the frequencies is not equal across the full hearing range. There are dips and peaks, coupled with room interaction – room gain – that affects the final response between what the loudspeaker produces and what our human ear perceives.

Our speaker range is designed differently – we can either design the speaker to work in an acoustically treated room or make the speaker less sensitive to the room acoustics. A typical music lover may use Chario speaker anywhere and will get good results while an audiophile may take the room treatment seriously and we have the right speaker for one or the other.

Our ears can perceive differences between direct and reflected sound if it is more than 2 milliseconds. When a loudspeaker has a less wide dispersion pattern, and more directional, we achieve a speaker that is less affected by the room. We design that into the drive units – for instance the speaker cone surround can affect the speaker's directivity. We engineered a surround that can have an effect on the dispersion pattern at different frequencies! It can have a wide dispersion up to 1 kHz where it then reduces the dispersion in the midrange region and then further up the range at 5 kHz, the dispersion pattern 'opens' up again. This way we can affect the output of a speaker to be less interactive with the room.

The Academy, Premium and Silverette series are designed for acoustically treated rooms. They have a wide dispersion pattern over the entire frequency spectrum and the room acoustics will have an effect on the sound. Audiophiles would have a suitable room for listening, acoustically treated so these speakers are designed for them. The Constellation, Silhouette and Piccolo series have controlled dispersion and will have a sound that will not vary significantly when the speaker is moved from one room to another.

The Academy series have also set a new standard in speaker intermodulation distortion – to the order of minus 63 dB. Only electrostatic panels are able to achieve low intermodulation distortion but when they use a hybrid system where a dynamic woofer system is used to augment the bass region, the distortion goes up many times higher.

Earlier we talk about the effect of room acoustics and the design of the speaker dispersion pattern, the Academy Serendipity, Sovran and Constellation Ursa Major have the ability to remove room induced peaks and dips including room gain. Designed to work in rooms with at least 2.75 meter high ceiling, the placement and height of the speaker drive units interact with the room to even out the peaks and dips, not exaggerate them.

SPL!: So at Chario you make your own drive units?

Carlo: We design the speaker baskets, the surround, the speaker membrane, the voice coil, the magnets, etc. We source parts from the best in the business – Audax France supplies our tweeter membranes and a factory in Ukraine supplies some of our magnets amongst others. We source them from suppliers that are the best in the business. However the drive units are fully assembled and the speaker build in our factories – we have several factories in Italy, each of them make certain models.

SPL!: What amplifiers do you use in the development of Chario loudspeakers?

Carlo: We use all sorts – Accuphase, McIntosh, occasionally, Spectral and Mark Levinson.



Technology For Your Dreams



Chario Academy Serendipity

For budget amplifiers, we use NAD.

SPL!: There is the new K series.

Carlo: The K series are glossy finish, the speaker is the same. In some market in Europe, the white glass finish and light colour finishes are popular. In the Far East, our standard walnut finish is the most popular.

In this year's Munich High End show, we will introduce a new product line, when we introduce a new line, it takes as long as two years to complete the line - one model is launched at a time. Our products stay in production for a long time, some models have been around for 12 years. There are always small improvements over time until the changes becomes too extensive. The Academy range for instance is 'only' launched in 2005, that is 'new' by Chario standards!

Chario loudspeakers are distributed by Audio88.