

## Impressions: Linn's Reference System, A Study in Synergy, Part II

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**[This article is a continuation of my notes from our last issue, *Positive Feedback*, Vol. 7, No. 6. Readers are referred to it for my comments on the Linn Arkiv 2 cartridge and Linto phono amp. Later this year I will discuss the exceptional Linn CD-12 player and the stunning new Klimax amp/crossover system.]**

For one year — from November of 1997 until December of 1998 — I was privileged to have an extraordinary system in listening room one: Linn's reference audio system. During that time, in that room it was my exclusive system for both analogue and digital playback — a remarkable experience. For one year, I had the opportunity to explore the possibilities of audio system synergy in the most mature and well-crafted example of the audio arts that I have seen. The notes of this journey follow...

### The Arrival

About a week after Brian Morris confirmed *Positive Feedback's* request for a review system, a nicely shrink-wrapped pallet arrived via air freight from the U.K. It easily tipped the scales as the single largest shipment that *PF* has ever received; only the complete AudioNote Ongaku system that Leonard Norwitz delivered years ago (see *Positive Feedback*, Vol. 5, No. 1) comes close. After making sure that no external shipping damage had occurred, I left the bundle in place for opening when the representatives from Linn arrived...

...which happened shortly thereafter. **Brian Morris** (VP Marketing) dropped in to do the actual setup with me. We rolled up our sleeves and dug in on the project.

One thing that some reviewers (not including *PF* Editor Clark Johnsen!) do not make clear enough is the sheer amount of *hard work* that proper setup of a review system is — especially when you are working with a complete system. It isn't simply a case of taking a component and slapping(!) it into an existing rig... which ought never to be done, anyway. (If a proper understanding of system dynamics and synergy means anything in high-end audio, it means that changing *one* variable may well change everything.)

In this case, putting the Linn system into place meant pulling out everything in listening room one that did not have to be there. Brian asked if I minded getting *really radical* and removing it all. Nope; there's nothing like a good housecleaning from time to time, and I felt that it was only fair to let the system be placed according to Linn's normal recommendations. Since Brian had the same system in his listening room, I was quite sure that he would have a good idea of how to get the most out of the Linn system.

Apart from that, I was quite curious as to how the room itself would sound and progress as we "voiced" it to a very different system. (Remember that listening room was undergoing a rather substantial change: from the Graaf 200 WPC OTLs (loved 'em!) with Graaf preamp, all Cardas cabling, and the exceptional NOVA Rendition loudspeakers.) I had learned from my time with Michael Green that it is all too easy to overdo acoustical treatments; many audiophiles would be well advised to take everything out of their room and start over. So... out came acoustical treatments (ASC Tube Traps, Michael Green Corner Traps and PZCs), system enhancers (Shakti Stones, Shakti OnLines, the Vibrplane turntable platform), the Nova Rendition loudspeakers, and all the rest of the Coda electronics. All that remained were the equipment racks (two large Michael Green equipment stands and one Target stand) with

the Tice Signature III Power Block, and the album rack with the VPI 17F record cleaner. The room was looking nicely bare by this point; into its place went the following Linn gear:

\* The 5103 System Controller (preamp) with 5101 Personal Handset (remote control)

\* Four Klout amplifiers with Aktiv crossovers

\* A Karik CD transport

\* A Numerik D/A converter

\* **A pair of Keltik reference loudspeakers with dedicated polymer stands**

\* Linn speaker cables and interconnects

### **First Impressions**

The fit and finish of all pieces were extraordinary. As usual, Linn's combination of engineering and art struck me quite forcefully. Finished in black, understated, uncluttered, the components were a delight to look at. The four Klout amplifiers in particular struck me; each was compact, but massive. The chassis is milled, not merely assembled. Examination revealed that the internal layouts were impeccable, with PCB's to die for. And the Keltik speakers splendidly built: heavy, large without being overbearing, and with glorious fit and finish on the woodwork. The first look was very fine indeed!

The Klout amps were arranged in a stack, one per shelf. The two lower amps were monoblocked as left bass/right bass; the third amp was stereo midrange; the top amp was stereo high frequency. Configured in this fashion, Brian said that we were developing a most respectable 320 Watts per channel.

Of very special interest were the Linn Aktiv crossovers. These are special cards that can be installed into the Klouts to provide powered crossovers for the Keltik speakers. This allows Linn to dispense with passive crossovers (with their attendant sticky problems), and directly power the drivers from the Klout amplifiers. This is not new; 'phile phriends like Harvey Rosenberg and Phil Marchand have championed active crossovers. As a matter of fact, some of the finest listening that I've ever done has been on active crossover systems, carefully tuned for best response in a given room and system. Nevertheless, the Linn solution was notable for its clean and compact layout, the Aktiv crossover modules fitting neatly inside the Klouts.

Running the Linn K600 tri-wire speaker cabling was accordingly more complex than usual. Brian labeled all leads, to assure proper connection at the speaker end. The Keltiks were notable for having eight banana pin connectors, to accommodate the amplifier stack's direct feeds to the drivers. I got to see the driver array of the Keltik before Brian fitted the cover sock in place. The Keltik is a three-way design, with an oval woofer, 5" midrange, and ceramic tweeter, laid out on a special mount with sculpted face to break up reflectance and other nasties. (See the cover of *Positive Feedback* Vol. 7, No. 6 for an excellent view of the Keltik speaker layout.) The speaker cabinet is sealed; no ports. The pin connection is quite snug with the Linn cables; no danger of losing a connection. The speakers were mounted on special high mass dedicated polymer stands with imposing tiptoes, specially designed to prevent the return of low frequencies from the floor — no problem with improperly mounted load here.

It took well into the wee morning hours to get the parts roughly dropped into place, and all cabling and interconnections made. We placed a CD in the Karik transport, put it on infinite repeat, sipped some fine whisky and called it a night; we would pick up where we left off the next day.

## Days Two and Three

The next evening saw the fine-tuning begin. This consisted of two interrelated aspects: placement of the Keltik speakers, and setting the bass and treble frequency cutoffs and extension. Speaker placement and the fine-tuning of same is something that most audiophiles are quite familiar with. It can take hours, days — or longer! — to get a pair of speakers properly planted for best listening. In this case, it was longer.

The reason for the complexity lay in the fact that Linn's Aktiv crossover gives the user the unusual capability of "tuning" the characteristics of the crossovers to listening room conditions/speaker placement. Brian started out by placing the Keltiks approximately, towards the corners of the room, then listening to music for a while. He would get up from time to time and adjust speaker placement; an inch here, half an inch there, measuring tape in hand. At first, he seemed to be a bit perplexed; "There's something different about your room, David."

"You mean the non-parallel side walls?"

"*Uh...yeah*, that would be it. I'm used to standard rooms, you see... "

Poor fellow. He had been so very carefully measuring, and couldn't figure out why the front-to-back placement was off. I guess I should have reminded him that listening room one, a dedicated facility, was built to avoid parallel surfaces.

Once this was realized, Brian was able to re-do his placement with greater confidence. By the end of the third day, he had reached a point of reasonable satisfaction; the speakers were about one foot out from the side walls, a couple of feet forward from the back walls, and very lightly toed in.

Parallel to his work on placement, Brian was also fine-tuning the Aktiv crossovers. These can be set via DIP switches for both roll-off and extension. The midrange crossover settings are fixed at the factory and non-tunable; the work that he was doing was with the bass and high frequencies. For example, the bass amplifiers could be set for roll-off points of 40 Hz, 30 Hz, and 20 Hz, with switchable extension. Likewise, the high frequencies could be set for extension. Brian's approach was to work diligently on speaker placement for a couple of days, getting the location and toe-in established. Once that was right, he worked on the bass and treble extensions. For this room, Brian eventually settled on -1 bass level, +1 bass extension, and factory defaults for the treble. Back and forth work over several days, to be sure, but very promising results by day three.

In leaving, Brian told me that it would take about a month for the system to hit its stride. "By then, it should really bloom." He left, promising that he and Barnaby Fry, Linn's West coast representative would stop in from time to time to check the sound.

## The Parts...

Each one of the Linn components was striking for several reasons. Whether it was the Karik CD transport, the Numerik D/A, the Klout amps, or the 5103 System Controller (no, they don't call it a "preamp"), all were compact and uncluttered. All were finished in an understated black. In keeping with Linn's traditional design practice, excess buttons, displays and frills were noticeably absent — so much so that some audiophiles might assume that there was less here than meets the eye.

And they'd be wrong. For example:

\* The Karik transport has a small display, which defaults to dashes during playback. Two buttons — one for OPEN, one for PLAY — grace the front panel next door. And there's a power switch with standard Linn green LED. That's about it. The CD drawer is front-loading, quick, and almost noiseless; it utilized the Linn MEKK 001 transport mechanism. Clean. Very clean. There is a CD SNYC input that handles the master/slave relationship between the Numerik converter (master) and the Karik transport (slave) via a single standard Linn RCA

interconnect. Dimensions are 320mm wide x 325mm deep x 80mm high; weight is just under twelve pounds (5.3 kilograms).

\* The Numerik D/A converter does little to draw attention to itself. The same form factor as the Karik, it has no complex buttons or switches. A power on with LED... nothing much else. The converter has 2 S/PDIF inputs and 2 CD SYNC outputs for multiple Linn CD transports or other sources. Analog(ue) output is via standard RCA phono jacks only. Both 44.1 kHz and 48 kHz signals are handled with 20-bit, 8x oversampling dual converters. The reader should note that the Numerik does not have HDCD™ capabilities, nor does it do 96/24, which is a DVD source. Dimensions are 320mm wide x 325mm deep x 80mm high; weight is just under nine pounds (4.1 kilograms).

\* The 5103 System Controller is a marvel of form and function. It has a swept-back front panel finished in slate gray, the body finished in black, with a panel display to indicate which one of its many input/output options are active. And they *are* numerous; you have to remember that the 5103 is not only stereo capable, but acts as the command and control center for Linn's comprehensive home audio/home theater topologies. For example, the 5103 has inputs for CD, satellite, DAT, analog(ue) tape, tuner, cable, VCR, TV, and laser disc... *plus* two auxiliaries. Audio decoding is built-in, supporting stereo, stereo sub, Dolby™ Surround, Dolby™ Pro Logic, and Dolby™ Digital; video decoding is both NTSC and PAL capable. Five digital audio (4 electrical S/PDIF, 1 optical) and 10 analog(ue) audio inputs are in place; eight composite video and two S-VHS video inputs are accommodated. On the audio output side are two digital S/PDIF, triple outputs for main right and left, center channel, left and right rear channels, and subwoofer for surround sound. There are three analog(ue) recording output pairs, plus multi-room stereo output for use with Linn's Knekt multi-room audio system. Video outputs total six, with two S-Video and four composite video outs. The unit has infrared remote for the 5101 control, plus multi-room and remote operation interfaces. In addition, an RS-232 port allows interfacing to PC-based software upgrades to firmware, increasing the easy implementation of future capabilities to the system. Switching power supplies of remarkably low-noise design also help to keep the weight down; the entire unit weighs in at just under nine (!) pounds (4 kilograms). Overall dimensions are 381mm wide x 355mm deep x 80mm high, very much in keeping with the form factors of the other Linn components.

\* The accompanying 5101 personal handset controller is the finest single remote control that it has ever been my pleasure to use. It is a hefty piece of equipment, with logically organized subsections for areas like source select (with eleven inputs!), source control (all CD functions are handled here), amplifier control functions, volume control, macro programming, etc. An entire audio/home theatre system with multi-room layout (via the Knekt system) could be handled from this one attractive and ergonomic wide-beam infrared remote quite nicely.

\* The Klout amplifiers were quite the little giants. Though relatively small (at the "Linn standard form factor neighborhood" of 320mm wide x 326 deep x 80mm high, each unit weighed in at around twenty-five pounds (over 11 kilograms) with the Aktiv crossovers in place. Each amplifier produced 160 Watts per channel (mono mode) into 8 Ohms, doubling into 4 Ohms. The input impedance is listed at 5k Ohms, with a voltage gain of 28.5 dB. Within each of the four Klouts was an Aktiv crossover system: two monoblock bass amps with low frequency crossovers, a stereo midrange amp with a fixed pair of Aktiv crossovers, and a high frequency stereo amplifier with a pair of high frequency Aktivs, as described above. The result was of one effortless power, with no sense of obscurity or veiling caused by compromised speaker-based passive crossover networks. This does mean that a Linn Aktiv system is **not** compatible with non-Linn components, and Linn takes special care to warn users not to play "mix 'n match" with other gear. (Bad sound and blown tweeters are the nearly automatic result... )

\* The LP-12/Ekos/Arkiv 2/Linto/Cirkus/Lingo combination discussed in our last issue continued to do an excellent job of delivering vinyl to the rest of the Linn system, and rounded out the package.

All in all, the parts comprising the Linn system demonstrated some of the most extraordinary design that I've ever seen, with thoughtful engineering and pleasing aesthetics conjoined in a unique way. And the most remarkable thing was the fact that the *entire* reference electronics

and connectives were composed of Linn equipment. Only the equipment stands and line conditioner were not from Linn. Synergy in spades — indeed! Speaking of synergy...

### ... and The Whole

The first several weeks were, as usual, devoted to system break-in. During most of that time, I simply let the CD player run various discs, starting with Jim Aud's Purist Audio CD, on infinite loop. (One of the best things about a dedicated listening room that is separate from the rest of the place is that you can do this sort of thing — for days on end — without causing headaches or disturbing anyone else. Makes audio reviewing *much* easier!) I didn't try to formulate a serious response to what I was hearing; I just tried to put a few hundred hours on the system as quickly as possible.

After three weeks, I began to listen to the system to gather more serious impressions.

The sound of the Linn system had, at first, been a bit constricted. High frequencies were somewhat subdued, which had made tuning both the high and low end rolloff/extensions a tricky proposition. (Ask Brian — he certainly worked hard at it!) This is nothing new; by the end of the first month, however, the Linn system began to gel in a fine way, and some superlatives were clearly revealed over the next several months:

**1) Silence** — Paradoxically enough, one of the most difficult challenges for audio equipment is that of *silence*: can a system accomplish "peace, be still"? Whether using analog(ue) or digital sources, Linn's system was always dead quiet in the absence of signal — no hum, of course, but also no white noise, no faint electronic whisper... there was nothing. And this even at significant gain levels. Without true silence, recorded music must struggle to the surface, and the holy Grail of *real presence* (the sense of not merely *hearing* a recording, but of more nearly being *transported to a place and time*) can never be achieved. Linn has accomplished quite the most remarkable demonstration of audio noise floor that I had (not) heard in a long time. The tandem of the 5103 System Controller/Klout amp stack were clearly designed with extraordinary care in this regard.

**2) Clarity** — As a consequence of the above, playback through the Linn reference system was a revelation of articulate detail and nuance in the recordings played through it. The sound was clean and direct, with the engineering values of recordings revealed (sometimes mercilessly). I was struck in this regard by the seamless nature of the Linn Aktiv crossover network. The transitions from one frequency range/driver series to another were done without noticeable bumps/dips. This contributed to the sense of ease that the system developed.

**3) Bass extension** — I was quite impressed by the way that the Klout/Aktiv crossover set, monoblocked for the bass region, worked with the oval woofers in the Keltik speakers. The lower frequencies were deep, rich, but not bloated. No doubt, the monoblocking of the two Klout amps for maximum power supply in the lower realm (160 Watts per channel!) contributed markedly to the result. Those who know me know that I strongly prefer full range audio systems, with no chopping of the last octave. The Keltik did a fine job of dealing the 20-30 Hz range with both digital and analog(ue) sources, providing response that sometimes had me wishing to put felt liners on the frames of the art work hanging in listening room one. According to Brian Morris, Linn has now come out with some subwoofers to compliment the Keltiks that will "really rock the house!" If so — sign me up!

**4) Dynamics** — The dynamic range of the Linn reference system was superior. At no point did the Linn setup overload or distort, even with loud and dynamic passages possessing deep bass. The ability of this system to make you jump, or provoke the Holtian "goose bumps," was first-rate. Digital sources were good... analog(ue) through the Arkiv 2/Linto source was even better.

**5) Timbre** — The sense of wood on metal, plectrum on string, or bow on gut was very fine with the Linn gear. I had a sense that the *tone* and *texture* of the notes were right, and that, within the limits of the source recording/medium, were being properly rendered. Recordings that were warm and rich showed it; recordings that were dry or astringent were clearly

evident (unfortunately). The Linn system didn't sound stereotypically "solid state" at all; once could listen for hours at a time without feeling that the tone was harsh or etched.

**6) Tonal Balance** — No particular colorations attended the sound produced by the Linn reference gear. The rendition of music was well balanced, with no honkiness or nasality (midrange bumps), no woofiness or bloat (bass imbalance), and no phase-shifting, beaming, rolloff, or harshness (high frequency errors). I have already noted that the Aktiv crossover network was nicely seamless in its handling of frequency transitions, thus assuring an exceptional level of tonal integration — what you would call "smooth sound." By the ton.

**7) Sound staging** — I wasn't sure what to expect from the Linn system in this regard. The three-way Keltik speakers looked well built, but the NOVA Renditions/Graaf OTLs were a hard act to follow — could the Linn gear give the sense of left/right/up/down/deep that marks world-class systems? Yes, as a matter of fact, it could. Brian's preferred speaker placement was further back, and closer to the corners and the side walls than I was used to in listening room one, but it worked remarkably well. I had an excellent sense of spatiality with the Linn, and did not feel deprived by comparison with the earlier review system.

**8) Imaging** — Imaging was excellent; the placement of instruments and vocalists was precise, and layering detectable to the limits of the recording technology and the medium employed. Good CD formats — GAIN/GAIN2, XRCD/XRCD2, DCC Gold — did well enough via the Karik/Numerik; good LP reissues seemed to do even better through the Arkiv2/Linto.

**9) Authority** — The Linn system was able to present sound with an ease, a power, and an understated elegance that was always *convincing*. This is something that, in my experience, happens infrequently. Without massive stacks of equipment or six foot tall loudspeaker monoliths, the Linn gear made an indelible impression that you were hearing the recording, and that you were hearing it pretty much as far as the medium in question would allow. Very few audio systems, in my experience, share this same quality.

**10) And, above all, Musicality** — "It's always *musical*," mused Scott Frankland after one listening session. (Given Scott's credentials as a brilliant audio engineer and designer, this is fulsome praise.) Listeners as diverse as Scott, Jennifer and Michael Crock, Clark Johnsen, Mike Pappas, and Tom Davis all expressed favorable commentary about the synergy and performance of the Linn system in listening room one. Within the constraints of the listening room itself, the music allowed groups of users to listen with pleasure, and without fatigue, for hours on end.

### **Bad Idea: Attempted Tweakery**

Most audio combinations — and as I think about it, I suppose that there are many more "combinations" than there are true "systems" — are amenable to tweaking. This is the tried and true method of improving the sound of audio gear through parts upgrades, substitutions, placement, and various accessories. *Positive Feedback* has documented a number of these audio enhancements over the years, many of whom work very well in various settings. I have some of these on hand here, as documented above. Once the Linn gear was broken-in, I decided that the time had come to try an improvement or two.

The synergy of the Linn system was most obviously demonstrated when I tried replacing the Linn source interconnects with my trusty Cardas Golden Cross cables. Normally the Cardas cables do very well as upgrades to an audio system — they had been exceptional with the Graaf/NOVA combination — but not this time.

The sound immediately changed quite noticeably in character, and became darker and somewhat rolled off. I left the cables in place, thinking that a few weeks of break-in should open up the sound. Unfortunately, as time went by, it became clear that the sound did not seem to improve, and that the Cardas interconnects were not integrating into the Linn system successfully. By that time, Linn West coast representative Barnaby Fry was due to arrive for a visit, to check the performance of the system. I left the Cardas cables in place to see what his reaction would be.

It didn't take very long. As he listened, Barnaby became restless, and said that the system didn't sound right, and ought to be better. I mentioned the substitution of the Cardas cables; he politely asked if I would put the Linn interconnects back into place and see if it made a difference.

It did... a substantial one. The system immediately opened up again and showed the high frequency energy and presence that I had enjoyed so much. Lesson learned: the Linn system worked very well with Linn cables, and less so with the Cardas, which together with the JENA Labs, are favorite interconnects of mine. When I reported this to Barnaby, he wasn't surprised; neither was Brian when I mentioned it to him. "Of course... they're *made* to work well together," said Brian.

A second Cardas substitution did better, however. The removal of the standard IEC power cords and their replacement with Cardas power cables did improve the clarity of the sound, so I can recommend that particular improvement. The Cardas power cords therefore remained in place throughout the balance of the review. I also preferred the sound of the Linn source components through the Tice Signature III Power Block as opposed to directly plugging the sources into the wall. The Klout power amps, however, remained directly plugged into their dedicated 30 amp circuit.

I note that if one has a Vibraplane isolation platform, it works rather nicely (though incrementally) with the LP-12 turntable, furthering marginally the already low noise floor that the Arkiv 2/Ekos/Lingo/Linto/Cirkus/5103 combination yields. (In this regard, the five-inch concrete floor below the carpet pad and carpet in listening room one does help substantially... )

Apart from use of the Bedini Ultra CD clarifier, no other tweakery was used with the Linn gear. It seemed to do very well without most of it, and I wasn't tempted by audio restlessness to try very much — a tribute to Linn's engineering, in my view.

## Conclusion

The sound of the Linn system was so good by the spring of 1998 that it remained in place for most of the rest of the year. Brian visited several more times to check the performance of the system, but pronounced himself quite pleased at the results without any further adjustments. "It sounds bloody wonderful right now, David; I'm not going to touch it!"

This was no understatement. It was clear that as the Linn system was fine-tuned into position, then allowed to bloom, that the quality of the audio reproduction was truly world class. Months of listening to both analog(ue) (lots... love that LP-12/Arkiv 2/Linto combo!) and digital sources convinced me that I was hearing the best solid-state sound that I had ever heard in listening room one.

When the time came to return the review equipment, Brian and I both shared a sense of melancholy. The excellence of the sound of that system in room one had been such that we were both a bit depressed at disassembling the gear and boxing it up. "It's a shame to break this up. I'm a bit angry at having to do this, you know," he mourned.

Me too.

And in the aftermath of the Linn project, I confess to missing the effortless beauty that the Linn reference system produced at the drop of a hat. In my experience, only the finest tube gear had ever given me the sort of deep satisfaction and delight that the Linn work did. I have had to re-adjust my expectations in the wake of this experience; audio decompression, if you will.

But I had to count my blessings: for the period of nearly a year, *Positive Feedback* was given the opportunity to live with an entire audio synergy, produced by a company with a clear vision of how to fuse engineering and art into one — and also possessing the means to produce that vision successfully. In high-end audio, there are only a very few companies that can give us an "end-to-end" statement of audio as an art form. Linn is a charter member of

this exalted clan. And its achievement in the Linn reference system places it at the supreme level of accomplishment in the audio arts. *Anyone seeking the extraordinary in an audiophile system absolutely owes it to themselves to audition the Linn reference system before making a final decision.*

I can give no higher praise.

**Prices (all in US dollars):**

Karik CD player, \$3,595.00; Numerik D/A, \$2,595.00; LP-12 turntable with base, \$1,845.00; Lingo 33/45 rpm power supply, \$1,450.00; Linto phono preamp, \$1,500; Ekos tonearm, \$2,595.00; Arkiv 2 MC phono cartridge, \$2,200.00; Linn AV 5103 System Controller (preamp, includes 5101 personal handset), \$8,495.00; Klout power amplifier, \$3,995.00 per unit; Keltik loudspeaker with Aktiv crossover module, \$9,995.00. The speaker cable used was the Linn K600 tri-wire at \$34.00 per meter.

Note that the total MSRP of the Linn reference system totals \$37,225.00.

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