National College of Art and Design
Faculty of Design
Industrial Design Department

# Design Success, Market Failure.

by

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## Abstract

This thesis addresses the challenges facing a designer in developing a product for the connoisseur market. To be successful the design needs to be of a high quality but at the same time it must be able to pay for itself.

Quality is mis-conceived in the Compact Disc. The development of the Compact Disc is a success but, while the mass market is delighted with the it, it is shown that the turntable still provides the highest quality sound reproduction.

John Bicht produced a turntable which is considered the best ever made but it failed at the market stage even with a backlog of orders waiting to be completed.

The conclusion is that for a good design to be successful it must address the issues of marketing and production as well as those of aesthetics and quality.

**Acknowledgements**

The writing of this thesis would not have been possible without the help and contribution of a number of people.

I wish to thank John Bicht, the designer of the Model 1.0, for his time and explanation of his design. Thanks to Noel Cloney and Joe Lanigan from Cloney Audio for their insights on the high-end audio market and on digital and analogue technologies. Thanks also to Peter Dand & Company Ltd. All of the above people supplied the information and views which were to prove invaluable research for this thesis.

Special thanks go to Paul Caffrey for his guidance and patience and to Joe McCarthy for the same.

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## Chapter 1 Introduction

The Versa Dynamics Model 1.0 is arguably the best turntable ever made. This thesis will address those aspects of design which are necessary for success in a consumer market. The crucial issues when designing for a limited market are those of technical design, manufacturing, and marketing. The approach adopted by John Bicht, the designer of the Model 1.0 turntable, in addressing these issues will be examined and the fate of his design will be compared with that of the Jaguar XJ220 car.

Why was Bicht striving for excellence in producing an analogue turntable when the mass market thought that the CD produced higher quality sound than vinyl records? Which produces the better sound quality, CD or vinyl and which has the better market success? Can the design process afford to concentrate solely on the technical design aspect, to the detriment of the production and marketing aspects? If so, how will the overall design quality fare?

The introduction of the CD during the last two decades of the twentieth century has brought about a dramatic adverse impact in the quality of audio reproduction for the high-end market. The mass market perception of CDs being the ultimate improvement for sound quality is quite the contrary.

This thesis will review the history of the turntable and of its rival the compact disc, compare them and show why it is still worth giving thought to the already doomed vinyl medium and the turntable. Understanding the technology used in the audio components is not especially necessary but to appreciate the slant and conclusion of this argument some background knowledge on the basis for it will be provided.

Completing a circle of evolution from craft to mass manufacture by popular demand and now back to limited production for its final few years, how has the turntable enjoyed success? The turntable, commonly known as the record player, is going through a shift in its previously established market, disappearing slowly from mass production, pausing in the high-end design studios before becoming just a memory.

Is the turntable still getting the attention it deserves, now at the penultimate stage of this transition? During the past decade it has become increasingly difficult to buy music recordings on quality vinyl records. Turntables are becoming obsolete by default as the records which are played on them are being phased out. High-end audio component producers have always been noted for their lavish creations and for setting standards with their products which major companies could only aim at.

Small production numbers of specialist components means a high price. Is there still enough demand for the turntable in this small market to justify the use of time and money on new projects?

Since the switch to Compact Disc, more commonly known as the CD, was a decision made by a large corporate alliance between Philips and Sony the question of the CD's dominance over records was never in doubt. The move made good financial sense and most importantly it appealed to the public. People were tired of the fuss and ritual involved with playing their records and the user friendliness of the CD was seen as a dramatic improvement. The other bonuses of the new system, such as random track access, along with a relatively short wait before its price levelled out helped make its introduction to the general market an acceptable one.

When the market made the move from record to Compact Disc what was the impact on record sales in music shops?

The Compact Disc is here to stay and was seen as the technical progression from records by the majority of music listeners. But what of the vanquished turntable and why give it a second thought? Most major manufacturers have ceased development of new models and popular midi-system ranges no longer include a turntable for playing records as a part of their set-up.

In this thesis a link is drawn between the high-end audio market, the equipment that is produced for it and the design methods used in the production of that equipment. This is referred to as high-end design. It is likened to an artistic process, made up more of trial and error than of a set routine for design. This allows the personality of the designer to be seen in the product, as is often the case in the high-end audio market. The high-end audio market simply refers to the more expensive end of the audio market that supplies hi-fi products as separate units to be chosen and matched to the taste of the buying listener.

High-end design for audio equipment is generally produced in small batch production numbers, though the small quantities do not take from the radical solutions that high-end designers offer. Enthusiasts and designers will usually find some way or another of getting their more unusual ideas across and limited batch production is a valuable stage for them. Though the designs sometimes do not work, more than enough successful ones emerge from the process for it to remain a viable one. The success of these ideas is the pursuit of high-end designers. Sounding as good as they do, are these limited quantity designs as completely successful as they first appear?

John Bicht is involved with audio equipment design and his company, Versa Dynamics, has produced turntables. The Model 1.0 is one of his two designs so far and it is around this machine that the arguments will be made. Bicht's turntable will also be used to draw attention to high-end

design and its future. The turntable also illustrates the design possibilities that come from small batch production and some of the vulnerabilities of small manufacturers working at this time.

## Chapter 2 Background

### Turntables

Thomas Edison invented the turntable over a century ago. In the beginning sounds were produced on a tin drum that was turned by hand but very soon afterwards the phonograph evolved and in 1896 Emile Berliner invented a superior mechanism: the gramophone.

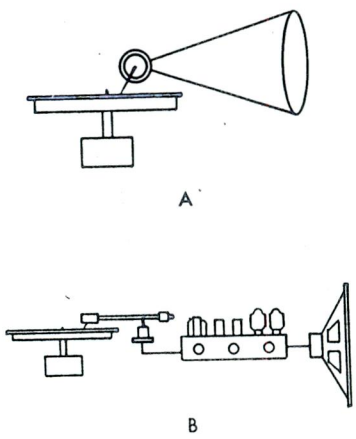


**Figure 1** (A) Mechanical Phonograph
(B) Electric Turntable

Many improvements were made during the developing years. The discs onto which the music had been recorded were upgraded substantially from hard brittle bacalite to the more flexible and longer lasting vinyl. The way in which the sound was transferred from the playing needle also evolved from the purely mechanical amplifying horn into the electrical domain where valve amplification and loudspeakers produced better audible projection.

In 1956 the turntable first took on the shape that is so familiar to-day. A collaboration by Dieter Rams and Hans Gugelot brought the Braun 'Phonosuper SK 4' radio and record player into being. The transparent plastic cover now synonymous with turntables was a feature of this player.

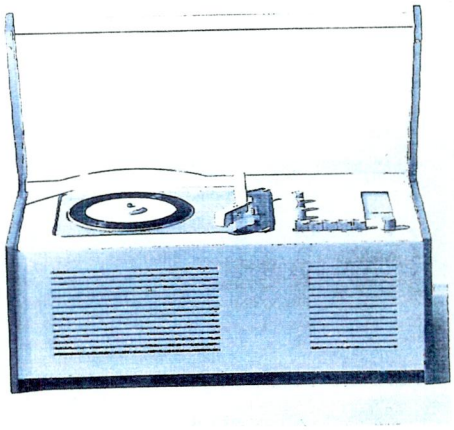

**Figure 2** The Braun 'SK 4', 1956

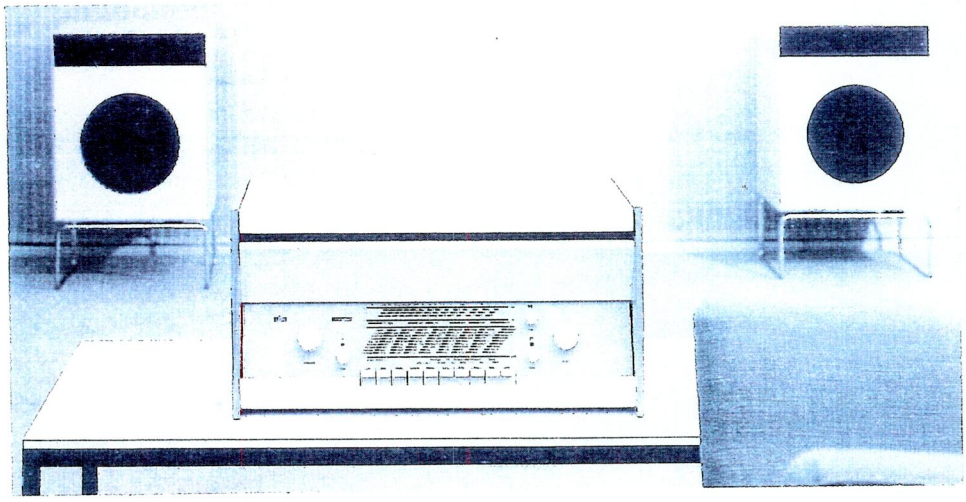

**Figure 3** The Braun 'Atelier 1', 1957

By 1962 Rams, again for Braun, was releasing stereo record players that combined futuristic styling with the lesson learned from the 'Atelier 1' released in 1957. This lesson came from wanting the dimensions of the receiver and record player to be as small as possible without compromising the sound quality. The solution for this problem was to separate the speakers from the main cabinet and put them into enclosures of their own.

The turntable continued with successive improvements during the three decades starting in 1960 and became a complex instrument that has sub-divided into three main components. The chassis is the base of the unit and generally houses the motor and spinning platter. The cartridge houses the stylus which is in contact with the grooves on the record and the tonearm connects the cartridge to the chassis. Each have become areas of specialisation for small companies though large producers invariably offer a complete package.

## Compact Discs

The Compact Disc was a large step forward in the use of technology and was the joint development of Philips and Sony, two of the worlds largest audio electronics companies. Released in 1980 the CD initially made slow progress, but precise marketing tactics and agreement between manufacturers and music publishers gave it a very sound base. Targeted at the turntable and at records, the CD now holds a much greater share of the market than the record and there is little chance that this position will ever change. The CD will be the dominant music medium for the foreseeable future.

The CD had many extra features that made it attractive to the buying public. It was also thought to have solved all the problems associated with vinyl records and turntables. This increase in audio quality was very obvious at the less expensive end of the market and the claims of the manufacturers seemed to be quite correct. Many people were used to listening to records played on 5 to 10 year old cheap mainstream turntables that had never had a change of stylus. For them the difference between the two formats was clear. The CD sounded clean and had none of the background noise associated with records. Convenient small size and the quick introduction of portable disc players and in-car versions caught the public appeal. Easy to use and more resilient to wear and tear, the CD has become ever more successful.

CDs are very versatile and compact, and their size allows them to be portable in much the same way as the cassette. However, music on the move suffers from a drastic reduction in fidelity because earphones or car speakers are used instead of a properly set up pair of loudspeakers. The volume of ambient noise present in a car or while out walking cannot be overlooked either. On the other hand, the record player is a stable instrument and the ideal place for its enjoyment is in the home where the

atmosphere can be controlled by the listener. The setting and atmosphere of the listening environment are both contributory to the subjective quality of the musical performance so it is important to get them right.

## High-end Enthusiasts

During the latter half of the 1960s groups of people emerged in Britain and the USA that were no longer satisfied with the quality of the sound they got from their equipment. These sound enthusiasts with new ideas made improvements for themselves and found that there was demand for their improved products. Cottage or garage industry was launched into the audio world in earnest and ever since has been gaining in popularity.

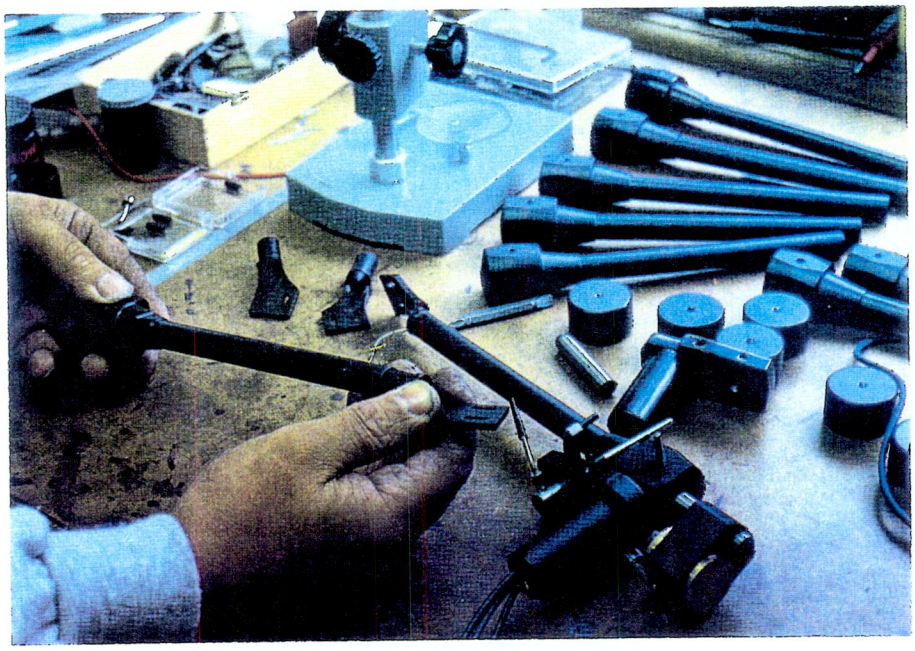

**Figure 4** Hand Made Tonearms by Tom Fletcher of Nottingham Analogue Company


**Figure 5** The Linn LP12. A classic turntable from one of the original cottage industry companies.

A prime example of a small batch production company is Linn Audio from Scotland. The founder, Ivor Tiefunbrun was a student of electronics who enjoyed music. His father had an engineering plant in Scotland and during the weekends Ivor would work on his ideas in the plant workshop. He set about improving tolerances and the composition of the different parts of his turntable until he finally found a very good balance. Word of mouth spread his achievements and in time Linn Audio emerged. Since then the company has manufactured loudspeakers, amplifiers, tonearms and cartridges, and even has its own record label.

Though the small batch production industry is more involved with the pursuit of excellence than their mainstream competitors, the multinational companies are making enthusiastic progress too. Concentration on the CD and digital techniques has meant the development of new products. Digital Audio Cassette, 'DAT', is one such product. Recordings made with DAT combine the cleanliness of digital and the warmth of analogue to produce a sound that is agreed to be better than that of the CD.

**Market Shift from Records**

What of the continuing evolution of the record player? The end of the turntable is in sight, a fact sadly admitted to by high-end audio dealers. Ten years time will almost certainly have the turntable fully out of the public eye and left to the few undeterred supporters of analogue technology. This is not to say that people will scuttle their record collections outright but never again will the record be for sale in the popular music shops. The simple fact is that it will no longer be profitable to supply records to a mainstream market that wants Compact Discs.

**The Survival of Vinyl**

The turntable is no longer a popular product. The market has made certain of this, and any new developments are taking place in the small workshops of high-end audio craftsmen. The latest creations are likely to be some of the last for the turntable, and this sentiment almost seems to have been taken into mind by the designers. The products that are emerging from these companies are a far cry from the standard mass produced turntables. Sound quality and visual appearance are the two most immediately striking aspects of the designs. The turntables have an air of permanence and

simplicity that implies a long process of development culminating in a simple distilled design.

Going a little deeper into the engineering and electronic aspects of the turntables, the quality and precision are kept to very high standards. Every effort is made to allow the spinning of the platter to be smooth and fluctuation free and to encourage the optimum contact between the stylus and the record grooves. The desire was there to make a turntable that would never need to be replaced, a machine that one could play records on without distortion or interference for a lifetime.

Small batch production industry is keeping the record player alive, but the cost is high. The number of new players being produced is falling and so too is the number of new companies. This small market and the batch production scale means that it is expensive to make the equipment. The realities of manufacturing mean that this type of hand-assembled, complex item will always cost more than mass market compromises. High-end audio costs a lot when considered in terms of money though this must not be confused with value.

> A price tag is meaningless if the product does what it promises. Harsh though this may sound, your own financial situation has no bearing on the integrity of a high-end manufacturer. And it strikes me as tragic that only the hi-fi community taunts and intimidates those who support the high-end.[1]

High-end products are here to serve as inspiration, something to be excited and thrilled by. The products realised by small companies are very personal, the result of many of them being owner or founder led. Unlike

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[1] Benham, 1992, p.2

products which are designed by teams for the mass market, the best of high-end components actually reflect the personality of the person behind the product.

> ... those of you who have met high-end luminaries at shows will know that they walk it like they talk it ... This analysis works right down the line, so flaky equipment equals flaky designer. Low-end mind? Low-end products. Dishonest? Then your gear will probably rip you off.[2]

High-end turntables as well as other audio products can be seen as a reflection of their creators, and the state of technology and design of the time.

> The high-end market is broad in the sense that it caters for all walks of life, from bin-men to professionals to captains of industry, though it does not cater for the mega rich.[3]

Approximately 80% of people who buy high-end equipment listen to classical music, with jazz and rock making most of the balance. Most people start buying when they are young and steadily upgrade their system as their taste and financial positions develop. It must be pointed out here that high-end equipment starts at very reasonable prices and a good system can be put together for about £1,200. Such an investment would give the listener a suite of components from the mainstream of the hi-fi separates market. The Versa Dynamics Model 1.0 turntable is not such a product. Brought into production in 1990 and with only eighty of them ever finished this turntable stands out on its own, even in the high-end league.

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[2] Benham, 1992, p.2

[3] Lanigan, 1993, Interview

**Versa Dynamics and John Bicht**

In 1987 John Bicht took a holiday to England and while in London with friends his attention was drawn to the equipment available at the high-end of the record player market. Looking at these products he decided that he could do better. At that time Bicht was looking for a way out of the electronics industry which was experiencing a slump. He had been involved with electronics since 1982 and the knowledge acquired there would serve him well with the record player designs. The design process is a lengthy one which in the case of Bicht's Model 1.0 record player lasted one and a half years. The Model 2.0 was the player initially born of that research and the Model 1.0 followed with improvements and was a much tidier design.

The Model 1.0 looks very unlike a conventional turntable yet is still recognisably a record player. The solid, rigid aspects of the design are clearly communicated by the turntable's appearance. Four columns, about a meter in height, rise from a base to support a subchassis which carries a laminated plinth. Simple forms have been used throughout, the turntable appears to have been constructed entirely of different sized cylinders, topped by the split square slab of the plinth. There is contrast between the strength of the support columns and precise detail of the tonearm arrangement. The finish of the support columns is matt, lending a feeling of smooth, space-aged strength to their formal arrangement. The tonearm detail is finer with reflective finishes, symbolic of a pneumatic ram.

The shining steel of the arm evokes a frictionless quality to the movement of the stylus manifold, and this is not far from what is actually the case. The manifold sits on a cushion of air, separated from the steel tube by only 1/125th of an inch all round. This tiny air-filled gap is what makes this style of tonearm so successful.

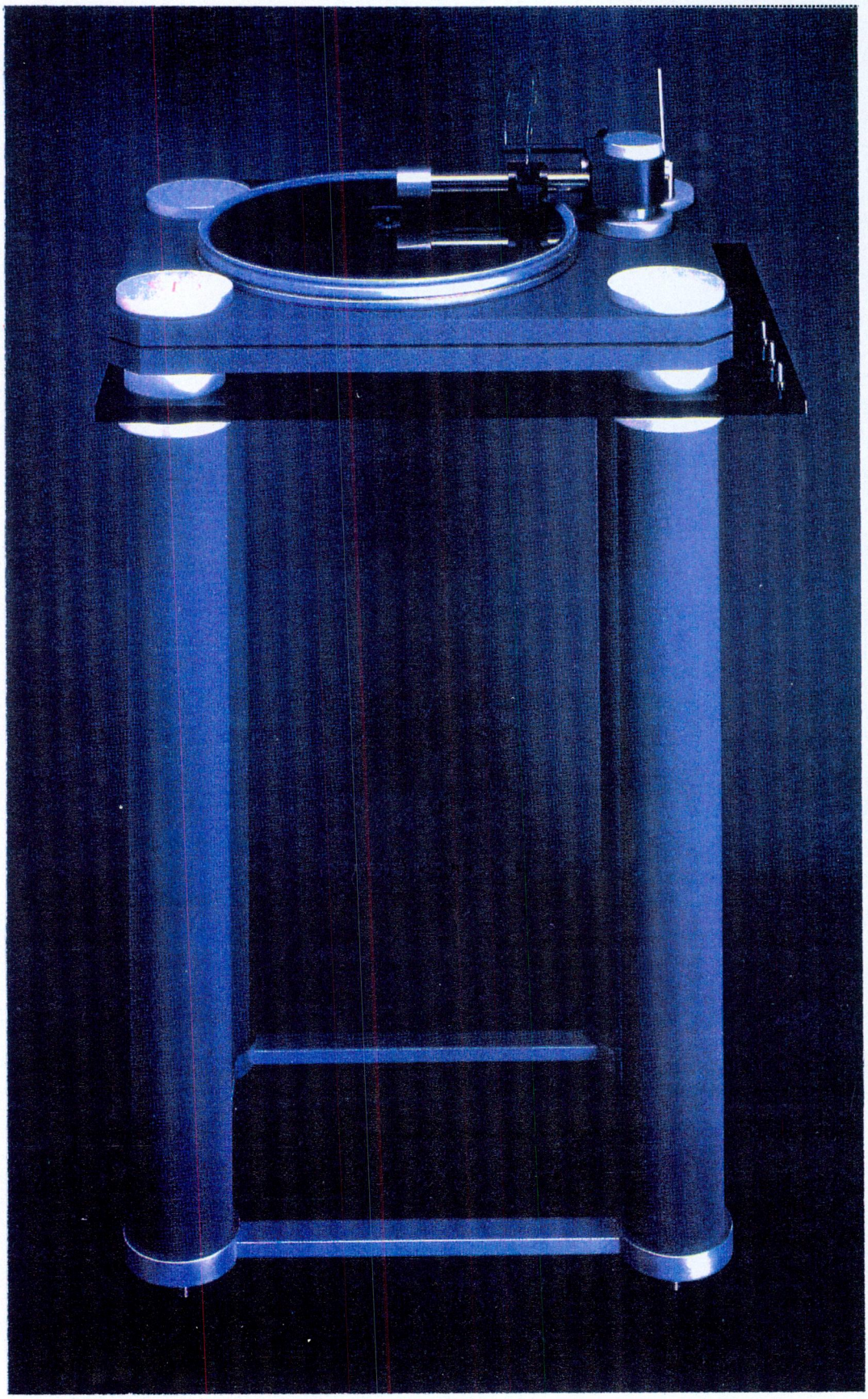

**Figure 6** The Versa Dynamics Model 1.0 Record Player

> ... as mentioned in that article the clearance is very tight, grease the thickness of a fingerprint can interrupt the travel of the manifold, but it is not necessary to keep the player in a clean room. I mean, we've removed all sorts of stuff from the arm during cleaning, all different sizes of dust, even paint and solvent specks. None of them effected the travel of the manifold. And though you'll get pieces of dust thicker than a finger print on the arm without effect, finger prints may cause interruption because they are sticky, the grease does it.[4]

The tonearm is of the same type as those created by Bruce Thigpen, chief engineer of Eminent Technologies, during the mid-eighties. His air-bearing tonearms have made great impact with audio engineers and brought reliable linear tracking down from the $3-4,000 range to under $1,000.

The finishing and technical aspects of the Model 1.0 highlight the quality and the extent to which high-end producers are prepared to go. With limited production and less cost in terms of advertising, the company can put more money towards improving the quality of the components used in the make-up of the product.

**The XJ220**

Jaguar's XJ220 was inspired by the success which Porsche and Ferrari had with their own limited production 959 and F40 supercars. Its road handling and all round performance are comparable to that of a racing specification car. Jaguar, or more precisely Jim Randle, has produced a very successful and desirable design. Prospective purchasers of the XJ220 were required to pay a deposit of £50,000 without knowing what the final price would be.

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[4] Bicht, 1992, Interview

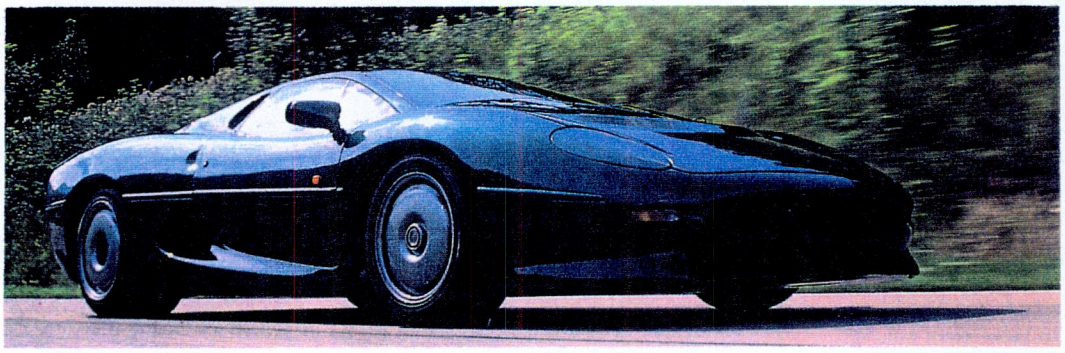

**Figure 7** The Jaguar XJ220

A limited run of 350 was planned and, with the guaranteed purchase of each car no matter what the final cost, the XJ220 has secured its marketing requirement in a manner very unusual for automotive design. Tipping the scales at £332,000 for the first car off the line with the price set to increase per car, each Jaguar could be swapped for a fleet of 10 new Renault Safranne V6 RXEs.

Jim Randle made the car possible and it delivers exactly what he always intended it to: a level of performance unmatched by any other car in the world whilst meeting every legal requirement for emissions and safety.

## Chapter 3 Findings

### Sound Quality

Sound quality is at the heart of the argument which has been fought since the introduction of the CD. The initial claims of the CD manufacturers, that here at last was the perfect interference free sound with wear to the discs, were hailed by almost all. The increased sound quality that CD had over average turntables is not to be denied but it must be put into proper context. CD does produce better sound than cheap turntables but, when examining the high-end of audio equipment, the CD takes second place to the record turntable.

> Expensive record players with finely honed bearings, precision platters, suspended subchassis and proper isolation from the motor and surroundings allow more musical information to become apparent to the listener of the hi-fi system. In theory, and often in practice, analogue technology can reproduce the whole audio bandwidth allowing recreation of the most subtle inflections of voice and musical instruments so that the feeling of 'being there' is more completely realised.[5]

The invention and development of the Compact Disc and a player for it came as a logical progression from vinyl and the turntable. The way in which it has captured the popular market illustrates how well the CD producers understood the market dynamics. Highly calculated marketing strategies and good user friendliness have, in the public view, combined to push the CD to the forefront of music listening devices. Over the last ten years the transition from vinyl to CD has been a steady progression and

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[5] Houston, 1992, p.24

now the majority of music shops stock only a token number of vinyl records, if at all.

However, the gradual shift between the formats has not been left entirely up to the whims of the market as one would expect. In order to protect the large amounts of money and time that had been invested in the development of the CD nothing was going to be left to chance. Subsidiary music production companies began producing records that had a reduced quality vinyl, and this had the desired effect of creating disgruntled customers who had to return to the shop to replace their new records. The replacement records also lost their top protective layer after a few plays, the music cracking and popping to the distress of the listener. Here the record suffered a double defeat. Not only was its future market in doubt but an inferior quality of vinyl was used for its manufacture, cutting its chances considerably.

The kickback reaction from the poor quality vinyl worked and interest in the CD grew - no more hissing or cracking and the prices were settling down. Recording companies were bringing out many more CDs and there was an ever increasing number of recordings to choose from. The market change-over snowballed, old and bad quality vinyl was swept aside by the new crystal clear sounds of the CD. The CD is a market and design success. It improved sound quality for the average listener but the claims made about it wrongly put the record down as an inferior audio medium.

## Analogue and Digital

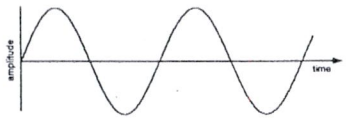


**Figure 8** Analogue Waveform

Turntables make use of analogue electrical circuitry from start to finish. The small electrical signal produced by a microphone is the same shape as the original sound wave, or as close as can be obtained. This effectively creates a direct copy, but electrical instead of acoustical. The electrical signal is then used to make a recording onto a record in the form of tiny groves on the surface of the disc. These grooves are read by the stylus of the turntable and the tiny movements are converted into electrical impulses which power the loudspeakers, freeing the sounds engraved on the record.

The manner in which the CD produces sound is also quite straight-forward. CDs use digital technology for their recording process and playback. In nature, all that we see and hear is analogue. The sound or image consists of a signal which is continuous for the entire duration we hear or see it. However, it is possible to fool the eye or ear into thinking that something is continuous when in fact it is not. The best example of this is film where a moving image is made up of a number of sequential snapshots of an analogue image. More snapshots are taken per second than the eye can detect so that as far as we can tell the image is continuous. The same is possible for sound with samples of a sound signal wave form replacing snapshots of an image. The ear is less easy to fool than the eye so the sampling rate must be higher for digital audio. Television updates the screen at a rate of 50 cycles per second but the Compact Disc has to run at a rate of 44,100 samples per second. This sampled audio signal is converted into a binary code which is analyzed and reconstructed so that it becomes audible again

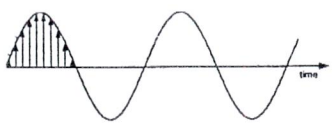


**Figure 9** Sampling the Waveform

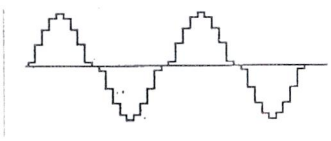

**Figure 10** Reconstructed Waveform

during playback. The speed at which this analysis occurs is called the sampling rate which corresponds directly with twice the frequency of the sound wave.

The analogue signal stays as faithful as possible to nature while the digital one makes thousands of samples per second in order to fool the ear into hearing a continuous signal. It can be said that the ultimate digital achievement would be an analogue signal.

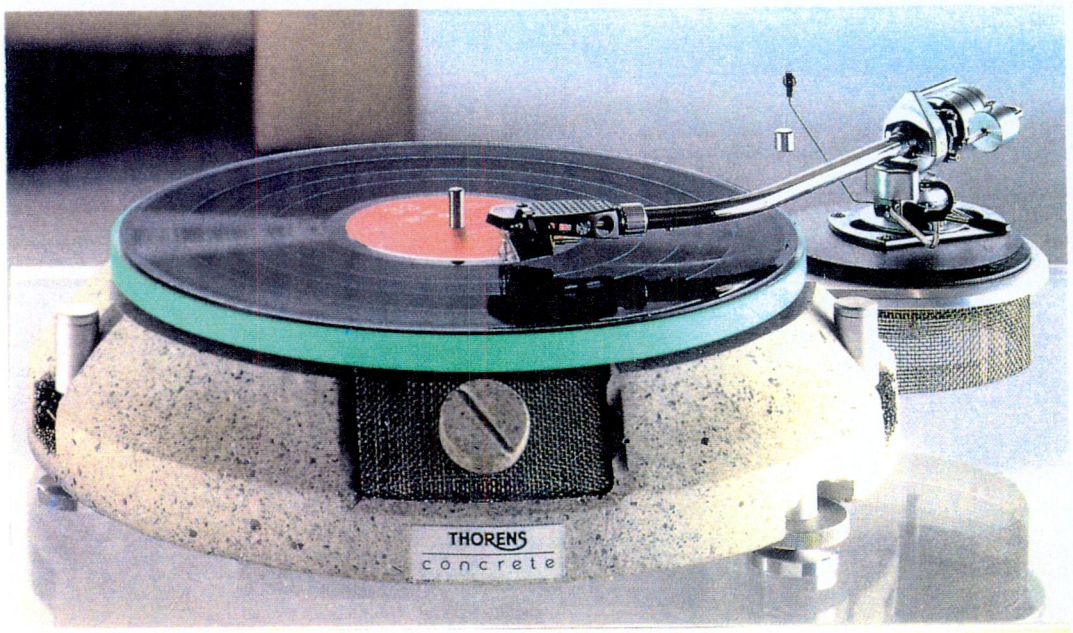


**Figure 11** The Stylus in Contact with the Record Grooves.

Not so apparent, until pointed out, is why the two formats sound so different. It would be reasonable to assume that during the digitising process that some information is lost, as it must, due to the sampling technique, but more than enough samples are made to fool the ear. The biggest difference between the formats is the physical contact or lack of it during playback. A rather unstated fact is that the physical contact between the stylus and vinyl record plays a great part in giving timbre to the music and the feeling of presence in the room with the listener. The physical contact is not present with a Compact Disc player and as a result the music

suffers from cold handling and a lack of atmosphere. Pioneer claims to tackle this problem on their newest Disc Player, with a system called Legato Link Conversion, which gives a much warmer sound from the disc by using the frequencies above that occur above 20 kHz.

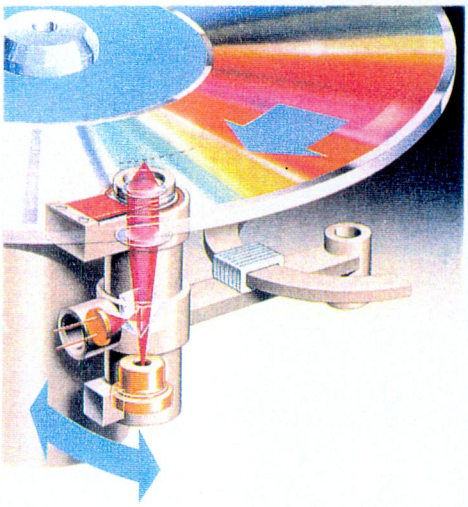

**Figure 12** Laser Reading a Disc

## Production Costs

Individuals and companies involved in any discipline at a small batch level have production quantities that are usually lower than those of a full scale production facility. Versa Dynamics is a company that functioned on this small scale, having 80 of its Model 1.0 turntables fully produced before it had to stop production.

The Model 1.0 is a crafted object, built by hand with the aid of machine tools. The obvious difference between this turntable and a mass produced model is the length of time it takes for one unit to be completed. The finishing and overall quality of construction are also of a higher standard. The longer time scale and much greater need for labour push the price of the unit higher and higher, as does the use of precision materials and other expensive components. The result is a high quality, expensive turntable. When it was still available, the Versa Dynamics Model 1.0 turntable cost $6,000 and even at this price John Bicht received many orders.

> The recession had set in, dealers were being cautious about taking on new lines, consumers were being very careful about their purchases, and the future of analog was cloudy at best. Nonetheless, Versa had far too many orders for its limited production

> capability. Near the end, the backlog was more than four months. At the same time, parts were becoming harder to get in a timely fashion, and significantly more expensive. The 'tables, incredibly labor intensive, ended up taking over five times as long to manufacture as had been anticipated.[6]

Orders came in to a total of just under 160 units, a positive indication for Versa. Unfortunately, about $1,000 was lost on each unit produced and after 80 had been completed Bicht just had to stop production, left with 75 uncompleted orders and no way to finish them. As Jack English of Stereophile put it 'In short, success came too fast and Versa couldn't keep up'.[7]

If the terms of the word 'design' are expanded to include all aspects of the process, from the initial idea until the completed product has outlived its usefulness, the Model 1.0 was less successful. Something about the Model 1.0 would have had to change to ensure greater success. That something was the price. If Bicht had predicted the labour time correctly he could have seen that the price of the turntable would have to be higher to cover the cost of the extra production time. This in turn could have shielded him from the long delays that he was experiencing with parts orders.

Were Versa Dynamics a larger company this situation would probably not have arisen but then the Model 1.0 would probably not have happened either. No large company could have come up with this turntable because it was the result of the singular drive of John Bicht. It was Bicht who wanted to create the best turntable ever made. Having seen what was available on the market he decided that he could do much better and then

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[6] English, 1992, p. 143

[7] English, 1992, p. 143

set about doing it with the determination that delivered to him the acclaimed technical design of the Model 1.0.

In terms of technical design and function the Versa Dynamics Model 1.0 turntable is a complete success, lauded as the best turntable ever made. Every aspect of it has an air of calm and stability and its precision does the necessary justice to the playing of any record. Saying it is engineered to the point of perfection is not an over exaggeration. Its platter and tonearm boast some pretty special qualities from the field of physics. Comments from a lucky few who have heard the Model 1.0 in action say that its performance is just breathtaking. This really is the turntable to end all turntables. So far.

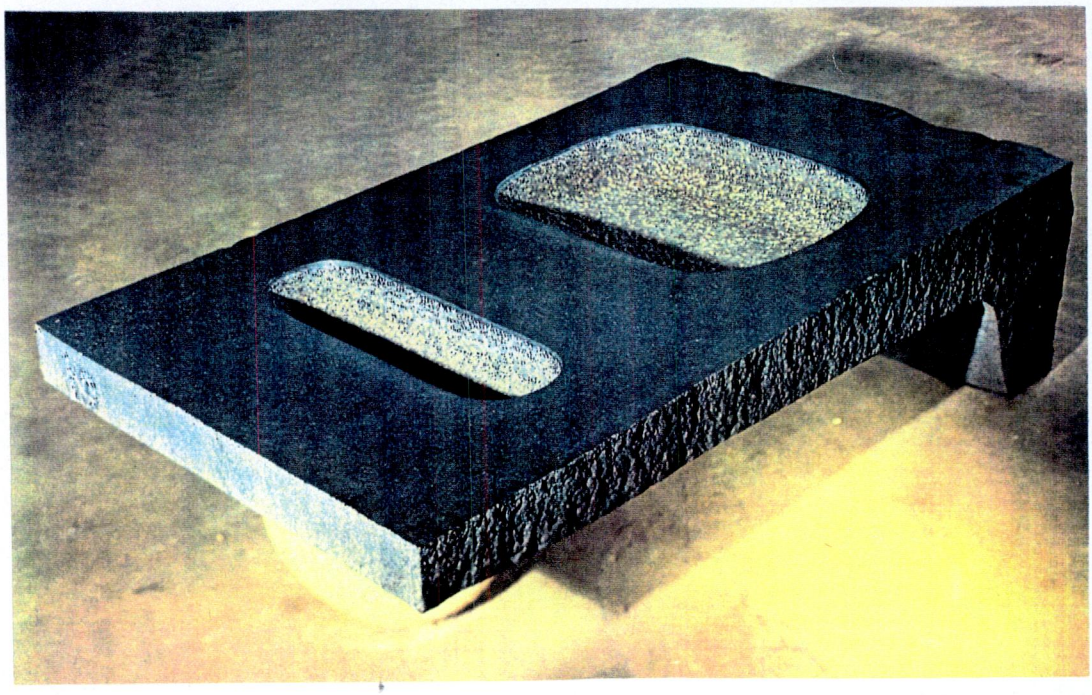

**Figure 13** Water Table by Noguchi, 1970

The success of the design will hopefully inspire others to work their ideas into being, even in the face of the turntables impending extinction. Actually some aspects of the design have already been 'borrowed' by a competitor but, annoying as this was, the surrogate completely missed the point of Bichts approach and produced a turntable of much inferior quality.

So few of the Model 1.0 turntables exist that comparisons are inevitably made with works of modern art. An article by Dennis Dollens of ID suggests its physical presence evokes the spirit of the work of Brancusi or Noguchi.[8]

## The Future for High-end Design

The future for high-end design is a question that not only applies to audio equipment but to all areas of design. The notion of the high-end market and the ideal it pursues, always seeking the ultimate in qualities from the design process, is an understandable one. By aiming for such objectives remarkable results become attainable. The beauty of these extensively striven for goals is that they allow the design process to become a passionate one and as a result much more of the individual or team becomes embodied in the final solution.

Passion is an overlooked part of the strict design process but it is a precious tool for the designer who may require its fire to bring dreams into reality. Firmly believing in what you are doing is also a valuable asset when nothing seems to be going right. While not proclaiming passion to be a cure for lost designs, it is worth noting that was this quality not involved then chances are the stranger and riskier ideas may not be pursued to their end or may not get consideration at all. The more unusual ideas are scrapped yet they may have yielded a solution from a more unusual angle.

The result of a project that has personal goals as well as those of the design brief is difficult to quantify. This is because it is virtually impossible to find a single item that has been designed with exactly the same

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[8] Dollens, 1991, p. 49

parameters to guide its development other than a passionate involvement with what is being attempted. It may be said that this is not the case with car design for example. At first glance it seems that most cars are designed to a similar formula towards a common goal of producing a marketable vehicle. The most distinguishing features of each design are the styling and handling of the car. There are many car designs, past and present and it is possible to see where an individual's personal involvement with the design has been communicated to the final product. On the other hand it can be argued that specific examples cannot be used for comparison because there is no second design that followed the identical pattern of the first design but for the passion of the design teams.

Therefore at a definitive level it is not usually possible to make comparisons between high-end and mainstream design. However, taking the products themselves and making aesthetic and performance related judgments about them, it is easy to make comparisons with other products in the same category. Returning to the Jaguar XJ220, the qualities of the car can be seen to have achieved the goals set for them by Randle. In this respect Jaguar succeeded in designing a supercar and also succeeded in achieving a marketing coup. John Bicht's success was limited to the technical design of his record player since his production company failed to make a profit due to underestimated manufacturing costs.

**Desires and Realities**

The future of high-end design is quite an assurable one because as long as people get dissatisfied with what they have or can get, the choice is always there to go off and do something about it. As of yet we have nothing that can be called the ultimate solution to any particular problem. Sticking to the physical and issues of design, of course there are many items that come close and for the moment are the best solutions we can offer. Take for example the paper-clip for temporarily holding paper

together, the aeroplane for transporting people and goods large distances, quickly and safely, or even the turntable for reproducing sounds and music in our homes. In years to come who is to say what will replace these objects, if at all. Will the replacement be a success? The wish to develop and improve is widespread and people are generating new ideas all the time.

## Chapter 4 Conclusion

The turntable is reaching the end of its life. The progress it has made during the last hundred or so years is enormous. Starting as a hand crafted object, an exclusive toy for the rich, it evolved into an everyday item to be found in almost every household. With its development, musical choice has become an expectation, no longer limited to the live performances of concert halls and theatres. Ten years ago the turntable began the completion of its cycle with the introduction of the CD. Since then, the phasing out of vinyl records by producers and record stockists has forced the turntable out of circulation, superseded by the convenience of the CD.

The over-estimated claims of the CD producers has had the effect of confusing the quality audio reproduction issue. Many people are of the opinion that the CD produces the best sound possible, while this is not the case. Sony and Philips addressed the situation in the audio market place and introduced the digital format. The new format raised the average quality of audio reproduction, but by designing solely for commercial success in the market place with limited ambition for quality, the result has been the potentially irretrievable loss of the highest quality sound reproductive medium: the vinyl record.

No longer a popular product, the turntable will cease to exist in the eyes of the market by the turn of the century. The latest creations are the final offerings from the cottage workshops that still favour analogue audio. The designs of the cottage industry bear little visual and almost no technical resemblance whatsoever to those of mass industry. The striking forms house ingenious engineering and technical successes.

A market for high-end components does exist and, as it is a well informed market, the unsung qualities of vinyl are known to it. The support that vinyl needs is in the mainstream audio market, the place where it has been given the worst deal. John Bicht was not making a mistake when he set about designing his turntable, he was sticking with the medium he knew to be of a higher quality.

It is perfectly feasible for a designer to produce the highest quality products but for them to be successful, the designer must be fully aware of the production and marketing requirements. As was demonstrated by the Versa Dynamics Model 1.0, the technical design can meet all the criteria set for it but the product still ran into difficulties. The design experience of John Bicht in producing probably the best turntable ever made, but failing to achieve a market success, stands in stark contrast with the complete success of the Jaguar XJ220.

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