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# *Introduction*

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It is always important to define the intent of a book and sometimes what it is not. Basically this is a technical book, one where the primary topics will be the technical aspects of Home Theater (HT) design. It is aimed at a reader who has some knowledge of audio-visual systems, but is not necessarily skilled in either. The use of math is limited, but the topic of HT cannot be fully understood without a minimum level of technical capability. To do so would be analogous to attempting accounting without using arithmetic or law without using logic (although it sometimes seems that this is common). My intention is to arm the reader with sufficient background in the pertinent subject areas so that they could design and build, or have built, a HT of the highest caliber.

I will also limit my discussion to what I will call high “value” designs and components. One can spend almost an unlimited amount of money on a HT, but that is not my interest here. My intent is to describe the most cost effective—the highest value—designs and components for the reader who has a limited budget and I doubt that anyone reading this text would not.

In my own HTs, I have done all of the construction work and this practical experience coupled with my technical knowledge of the subject matter has given me a unique insight into the design of HTs. I do not necessarily advocate a do it yourself approach to construction. This approach is by far the most cost effective, but it does require some very specialized skills and equipment and a huge amount of time. It can be done if one has the time and inclination, and, most importantly, the knowledge contained in this text, but, by far, the most common approach will be to hire someone else to do the heavy work. In either case, the knowledge gained from reading this text will prove to be the difference between success and failure.

This book would be great background for any HT installer. With it, you will gain a fundamental understanding of what needs to be done. I strongly recommend its use by this group. I would also recommend it to the consumer who wants to direct or at least understand the options available to them in a HT installation. Hiring a “pro” installer and giving them a free hand in the design and implementation may not result in the most cost effective or highest performance system. With the information presented in this book, it is hoped that the installer will get better and the consumer wiser. In that way, all parties involved will be more satisfied with the process and the final results.

If you are considering doing the work yourself, I do not discourage that approach. I have known people to build superior rooms by themselves, on their first try, with little prior knowledge or experience (but with the same kind of guidance that this book will give) and I document one such case in this text. But, to me, the ideal situation is for the consumer to do the basic floor plan selection and room design along with the specification of the system components then hire a contractor to implement it. With this approach a great deal of “negotiation” has to take place at the beginning to find a *workable* compromise between the owners desires and the installers’ capability.

Many of the construction techniques proposed in this text were developed through my own experience with construction and are not all that common. Some techniques may not be acceptable to every building inspector throughout the world or, most importantly, may not meet the numerous local building rules and requirements (code). One should always check the local codes to see if the construction meets them and modify the construction as appropriate. My techniques may also be somewhat difficult to implement and, in my experience, contractors always prefer to steer clear of this kind of unique work. If one allows the contractor to utilize those components and techniques that they are familiar with, then the quote may be better, but, unfortunately, these components and techniques may not always be the best value or performance. As a result, it has been my experience that the more common components used for HT tend to be premium priced ones (not always a good value), and the selection of alternates can often lead to equivalent performance at a substantially reduced price or better performance at the same price. When both parties are knowledgeable about the technical background, the best compromise between what the client desires and what the contractor prefers can usually be reached. Without this mutual knowledge, the compromises often

lead to higher costs or disappointing results, and make no mistake about it, these costs (and sometimes the savings) can be substantial.

I once saw a television show on “home theater” which estimated the costs at \$60,000–\$100,000. My rooms typically run between \$15,000–\$25,000, excluding labor, and for a significantly better design. Based on this price point, my approach would cost less than half of what the television program claimed the costs would be. The potential savings, as well as the performance enhancement, more than warrant the reading of this text if one is price conscious—at these costs who wouldn’t be?

The phase at which the consumer has the most influence on the success of the final project is the earliest stage of design. This is where the most important and wide-ranging decisions are made. I find that this is often where the weakest aspect of many of HTs originate. Many designs have significant flaws in their ability to isolate the sound from within and without. They also suffer from a poor selection of components—too much money spent in one area and not enough in another. Both of these aspects must be very early considerations in the design. It is not uncommon to run out of money at the end of the project, just when one is about to buy the speakers, and then to short change this extremely important consideration and purchase.

Many HTs look better than they perform which, I believe, is because most of the attention has been paid to making the room look good (typically by making it look like a commercial theater) without nearly as much attention being paid to its optical and acoustical performance. I will stress throughout this text that looking like a commercial theater is not really what one wants in a HT. If cost and/or performance are high priorities, then the room will almost certainly not look like a commercial theater. My clients have sometimes been leery of the early suggestions for the aesthetic features of the space. For instance, when I propose creating dark windowless rooms with masonry walls, kind of like a dungeon, clients (particularly the wives) often shudder. The fear is that the HT will lack any aesthetic appeal. The fact is that my rooms look different, but my clients have always found them to be ascetically appealing in the final analysis, particularly after they audition the superior performance of my HT designs. Fashionable HT magazines clearly put a very high priority on appearance, doing things and using materials and furnishings that I avoid as both costly and ineffective. They clearly are not using the materials and construction techniques that I recommend.

Like anyone else, I have my own personal preferences in aesthetics and interior decorating and there is no doubt that my designs lean toward those preferences—how could they not? I like simple styling with liberal use of wood for finish and trim; subdued colors (for which there is a good technical justification); and I have a strong preference for leather upholstery, which is not only practical and attractive but has very desirable acoustical properties. I would like to make the point here that after reading this book you should have sufficient knowledge to be able to select design themes, materials and colors which are compatible with both to your own personal tastes and which work well technically. Without understanding the technical background presented in these pages, it is difficult to mix subjective tastes with performance requirements in a way that will not compromise the end product.

I encourage you to read Appendix I on Subjectivism as I think that the reader would benefit from an understanding of my views on this subject.

Finally, a word on references. References have not been supplied in this book except for a single instance of my own text. This is because today, most cross referencing is done via a web search. I obtained much of the information in this book this way. I could have put in the links to these references, but I have found that links change so often that it is better just to give a list of keywords. I have provided such a list in the form of side notes for such words. The first place to start any investigation into more details is to use these keywords.