

MORE THAN JUST A
HOUSE!



A Treasury of Building Science and Useful Information
For the Curious Homeowner

V. MONROE FRITZ



PREFACE

The home above was built shortly after World War II in a small midwestern town. The home was less than 1,000 square feet and the maximum size of a residential mortgage allowed by local banks was \$3,000. When compared to the modern home shown below it is obvious that homes have changed a lot during the last seventy+ years. But most of that change is not as obvious as exterior appearances might make you think. Due to the evolution and revolution of Building Science homes have been completely redefined, even while the most basic functions of a home, (shelter, comfort, and security), have been maintained. If you want to understand and take full advantage of your home you need to understand this new and evolving Building Science definition of a home. Seventy years ago a home was simply a physical structure at a specific address. Today, Building Science defines a home as –

***a dynamic interaction between people,
structure, and energy.***

In short, Building Science now defines a home more as an “event” than as an inanimate “thing”, and there are many good reasons for this redefining process. If you’re curious – **read on.**



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Introduction

HOMES, CHAINSAWS, AND BOOT LACES

When you purchase a chainsaw from one of the world's best-known chainsaw manufacturers, you will discover that it comes with a forty-four page Instruction Manual. **No assumptions** are made about a customer's ability to use the saw safely and effectively. In fact, the manufacturer probably assumes that complete knuckleheads will occasionally buy their chainsaws. Thus, the need for extensive instructions. By contrast, I recently made an on-line purchase of new laces for my work boots. Inside the very common-looking package delivered to my front door were boot laces. Nothing more and nothing less. No advertisements, no coupons, and **no instructions**. The lack of instructions was no great mystery. The manufacturer of the laces **assumed** that anybody smart enough to order laces on-line would know how to use them. What could possibly go wrong? Would somebody thread the laces onto their boots backwards?

This book is all about a similar purchasing assumption – the **assumption** that anybody smart enough to buy a home probably already knows how to use that home. After all, most homebuyers have spent their entire lives living in a home, and our modern society is awash in information about homes – everything from magazine articles on how to choose the color of countertops, to video blogs on how to successfully install new floors. **But familiarity with living in a home is not the same as understanding how homes are built and operate**. A significant percentage of the assumptions we have about our homes are erroneous or incomplete – leading to loss of property value, comfort issues,



Chainsaw manufacturers wisely **assume** that some of their customers will need some instructions.

and high maintenance costs. Sometimes our assumptions are outright dangerous.

The fact is a surprising number of home operating novices purchase homes every day, and most of these homes do not come with an instruction manual. Home-operating novices are hard to identify because they are often hardworking successful individuals, businesspeople, or highly educated professionals with academic degrees. Maybe only a few knuckleheads buy chain saws, but lots of people with a minimum understanding of home operations buy homes every day, and since living in homes is so important to our overall quality of life, we should all be open to learning more about the subject.

The purpose of this magazine is to stir your curiosity about your home by sharing some insights from Building Science, history, and common sense. While most of us appreciate the value of history and common sense, Building Science may not be a familiar subject to you. Building Science is the “umbrella” science behind the specialized sciences of design, construction, and operation of a home. It can be a wonderful revelation to homeowners – a gold mine of empowering information that leads to a sense of peace and security within our homes. The roots of Building Science tap into our knowledge of construction, architecture, anthropology, physics, energy conservation, and even the

behavior of toddlers. It is literally the science that has something for everyone, and Building Science is a constant reminder that the whole is greater than the sum of its’ parts, always suggesting that a big picture perspective towards home ownership is both interesting and rewarding.

This magazine contains some useful information necessary for successful living in a home, but if you don’t have a background in Building Science, or you lack curiosity about the history and advantages of a commonsense approach to home ownership, why should you care? Afterall, in terms of “all there is to know about a home”, this magazine is like a tea-cup sampling of the Pacific Ocean. The answer is simple. By examining some of our routine assumptions about homes and their operation, we can increase our curiosity and open our eyes to a new level of awareness about the entire home-owner experience. We can take confidence in the knowledge that we are improving our ability to protect our homeowner investment while providing a comfortable and safe place for ourselves and our families to live. We might even have some fun along the way, such as learning how to make sure our boot laces don’t get threaded backwards. (What? You **assumed** that wasn’t a thing?)



Our world is full of common assumptions, like the assumption that everyone knows not to lace their boots backwards. But when we assume too much about our homes we lose the curiosity necessary to discover the very best advantages of home ownership.

CHAPTER 01

CREATING A

RECIPE

FOR A SUCCESSFUL HOME.

How do we recognize a successful home? Is there a rating system or a recipe that defines the ingredients required for a successful home? The easy recipe for a successful home, (especially for someone who does not have any background in construction or real estate), is usually very personal and often emotional. If you were raised in a large family whose home was overcrowded, then your recipe for a successful home probably includes a private bedroom for everyone. If you put a high priority on dining with family and friends, your recipe probably includes a large efficient kitchen. But along with these personal recipes for a successful home, I want to encourage you to include some Building Science ingredients you may not have tried before.

Starting with your personal recipe for a successful home, I'm going to add three new ingredients. The truth is, we can **measure** the success of a home in some very specific ways, and there are some very good reasons for doing so. If you've just come from a tent in a refugee camp, just about any kind of permanent shelter might be a recipe for a successful home. If you are used to penthouse living in Manhattan, then a lot more will be required to qualify as your recipe for a successful home. But even if there is no one single recipe, the addition of three new Building Science ingredients will give you some very specific measurements for your successful home. These three ingredients are – **sustainability, costs of operation, and livability**. Let's look at these three ingredients.



No matter what personal ingredients you like to include in your recipe for a successful home, don't forget to include the three main ingredients from Building Science – **sustainability, costs of operation, and livability**.



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Page 5. “LED chandeliers and granite countertops are wonderful, but they’re just shiny footnotes in the centuries-old struggle for shelter.”

Page 9. “Did you assume “the great American dream” of home ownership would cause the percentage of home ownership rate in the United States to be the highest in the world? Think again.”

Page 16. “Your home is continually threatened by a “big bad wolf”, but that threat is usually not of the catastrophic variety like an earthquake, tornado, or hurricane.”

Page 48. “I asked her, as respectfully as possible, if it had occurred to her that people don’t usually find cats in their ductwork?”

Page 50. “Building Science applications have so consistently pushed energy consumption issues forward in all aspects of construction and home management that energy efficiency is now officially **“the elephant in the room”**.”

Page 53. “Having insulation in your home can be like having a text-binging teenager in your home, it can be physically present but functionally absent all at the same time.”

Monroe Fritz is a certified infrared thermographer and has been an *Energy Star* building professional and building envelope specialist for twenty years. His professional credentials include certification/training with such diverse groups as the *American Air Barrier Association*, RESNET, (*Residential Energy Services Network*), the *Infraspection Institute*, and the *Building Analyst Professional* program from the *Building Performance Institute*. Monroe has conducted energy audits, construction inspections, and building diagnostics in more than 7,000 homes, churches, institutions, and commercial facilities. His projects have included everything from new *Habitat for Humanity* homes to training facilities for the Army’s SOF, (Special Operations Forces). He is the author of *Chasing Sacred Air*, a handbook for energy efficiency in churches.