

## Chapter 1

# Introduction

Scientific theories quite often go through three stages of development: – (1) Absurdity – the idea or theory sounds so absurd that one wonders why someone would have suggested it, (2) Familiarity – there appears to be growing evidence to support the hypothesis, and people begin to familiarize themselves with the concept, and (3) Inevitability – the theory becomes so obvious in hindsight that people would think why it was not recognized earlier and why it has taken so long for the community to come to accept it.

Is the financial market not random? Fifty years ago, the academia would think it was ridiculous to say that the market was non-random. Since then, there have appeared journal papers challenging the random walk theory. At the moment, some academics would conclude that the market is non-random (see details in Chapter 2). However, the debate is still on, and there could be many years before the final verdict is in.

During all these time, the market traders could not care less what the academics think. They swear, by their own observation and experience, that the market is not random. Some even claim even if it were random, with good money management, they can still make a profit from the market. They facilitate their own methods to trade. Some do consistently make money from the market year after year. They design indicators to forecast which way the market is heading. And they devise trading systems to enter and exit the market. However, no trader seems to care to analyze their indicators and methodologies mathematically, nor do they try to characterize them. Their tools range from the very useful to complete garbage.

This scenario is somewhat similar to alternative medicine thirty years ago. Then, alternative medicine was unconventional, unproven, and unorthodox, and was ignored by the mainstay medical researchers. However, some of the alternate approaches do represent many years of experience of the practitioners by trial and error, and can contain some truths. They may even depict innovative means to problems conventional medicine has no cure. But, then, of course, some of the alternative medicine is eccentric and harmful. It was fortunate that medical researchers did finally take a serious note at these alternative therapies, and apply scientific methods to study them. It would be up to them to differentiate the grass from the weeds.

The tools employed by the market traders have a similar script. Some professional traders, by trial and errors, pick certain indicators as their arsenals, and make consistent profits from the market, even though they do not exactly understand the properties of their accouterments. Other traders advertise their indicators, and black box methodologies, and claim they can perform miracles. Believers wind up losing their shirts in the market.

It is the purpose of this book to analyze their tools mathematically, and display their characteristics. Spectrum analysis is emphasized. Some of the ideas have been presented earlier [Mak 2003]. We will expand on those ideas. We will point out why some of the traders' techniques work, and why some do not. In addition, we will also look at how a good trading plan can be put together, and how, according to probability theory, some of the money management techniques employed by traders do make profitable sense. Furthermore, we will invent some new indicators, which have less time or phase lag than the ones currently used by traders. These would allow them to pick up market signals earlier. We hope that this presentation will be useful to the trading community.