

# Introduction

*“Any sufficiently advanced technology is indistinguishable from magic.”*

**—Arthur C. Clarke**

**SORCERERS** have their magic wands—powerful, potentially dangerous tools with lives of their own. Witches have their familiars—creatures disguised as household beasts that could, if they choose, wreak the witches’ havoc. Mystics have their golems—beings built of wood and tin brought to life to do their masters’ bidding.

We have our personal computers.

PCs, too, are powerful creations that often seem to have a life of their own. Usually, they respond to a wave of a mouse or a spoken incantation by performing tasks we couldn’t imagine doing ourselves without some sort of preternatural help. But even as computers successfully carry out our commands, it’s often difficult to quell the feeling that there’s some wizardry at work here.

And then there are the times when our PCs, like malevolent spirits, rebel and open the gates of chaos onto our neatly ordered columns of numbers, our carefully wrought sentences, and our beautifully crafted graphics. When that happens, we’re often convinced that we are, indeed, playing with power not entirely under our control. We become sorcerers’ apprentices, whose every attempt to right things leads to deeper trouble.

Whether our personal computers are faithful servants or imps, most of us soon realize there’s much more going on inside those silent boxes than we really understand. PCs are secretive. Open their tightly sealed cases and you’re confronted with poker-faced components. Few give any clues as to what they’re about. Most of them consist of sphinx-like microchips that offer no more information about themselves than some obscure code printed on their impenetrable surfaces. The maze of circuit tracings etched on the boards is fascinating, but meaningless, hieroglyphics. Some crucial parts, such as the hard drive and power supply, are sealed with printed omens about the dangers of peeking inside—omens that put to shame the warnings on a pharaoh’s tomb.

This book is based on two ideas. One is that the magic we understand is safer and more powerful than the magic we don’t. This is not a hands-on how-to book. Don’t look for any instructions for taking a screwdriver to this part or the other. But perhaps your knowing more about what’s going on inside all those stoic components makes them a little less formidable when something does go awry. The second idea behind this book is that knowledge, in itself, is a worthwhile and enjoyable goal. This book is written to respond to your random musings about the goings-on inside that box you sit in front of several hours a day. If this book puts your questions to rest—or raises new ones—it will have done its job.

At the same time, however, I’m trusting that knowing the secrets behind the magician’s legerdemain won’t spoil the show. This is a real danger. Mystery is often as compelling as knowledge. I’d hate to think that anything you read in this book takes away that sense of wonder you have when you manage to make your PC do some grand, new trick. I hope that, instead, this book makes you a more confident sorcerer.

## Before You Begin

**THIS** book has been written with a certain type of personal computer in mind—the Wintel, a PC most often built around an Intel processor and running Microsoft Windows. Many of the specifics in these explanations apply only to that class of computer and those components.

In more general terms, the explanations also apply to Macintosh computers, Unix workstations, and even minicomputers and mainframes. But I've made no attempt to devise universal explanations of how computers work. To do so would, of necessity, detract from the understanding that comes from inspecting specific components.

Even so, there is so much variety even within the Intel/Microsoft world of PCs that, at times, I've had to limit my explanations to particular instances or stretch the boundaries of a particular situation to make an explanation as generic as possible. If you spot anything that doesn't seem quite right in this book, I hope that my liberties with the particulars is the only cause.

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