Chapter 1

How we make sense of an incredibly complex world

Most of the advantages of social life, especially in its more advanced forms which we call "civilization," rest on the fact that the individual benefits from more knowledge than he is aware of.

Friedrich Hayek (1960). The Constitution of Liberty.
In Ronald Hamowy (ed.), *The Constitution of Liberty*, XVII (Liberty Fund Library, 2011): 73.

Recent innovations have allowed people to read materials using a wide variety of mediums, including iPads, computers, and even phones. But the original and still most familiar format is paper and ink. Yet the complexity of the coordination required to allow people to read even in this simple format is hard to believe. It illustrates one of Hayek's most profound insights: the ability of society to organize itself based on the pursuit of individual interests.

You are now reading words that, for many of you, are transmitted through the medium of two of society's most familiar products: paper and ink. These products are so common that we take them for granted; their existence seems to be as natural a part of our daily reality as does the force of gravity. And ink and paper are so inexpensive that they are often available free of charge. (When your mail arrives today, it will likely contain several catalogs and flyers advertising this clothing store or that supermarket. The cost of printing these mailings is so low that merchants daily send them out by the jumbo-jet load, all free of charge to those of us who receive them.)

And yet the people whose efforts, skills, and specialized knowledge, and the detailed information that went into producing the very ink and paper now before you, number in the millions. The printed words you are reading were composed by me, the author of this volume. But without the help of millions of other people from around the world, nearly all of whom are total strangers to me and to you, this modest book—the very printed words now before your eyes—would be impossible.

Consider the ink. Where does it come from? Its colour comes from a dye made from chemicals that were extracted from roots, berries, or bark. Who found those roots, berries, or bark? That person had to know which specific roots, berries, or bark to find. Most roots, berries, and bark won't work. And just how are the colouring chemicals extracted from this vegetation? Today that extraction is done through a complex process involving a mix of industrial chemicals and complicated machinery. The dye is then mixed with water, resins, polymers, stabilizers, and preservatives.

To make even one vial of the simplest and least-expensive modern ink requires the knowledge and efforts of many, many people. There are those who find the appropriate vegetation, those who design the machines for extracting

the colourings, others who operate those machines, and another group of people who mix the extracted chemicals with the other ingredients in order to make the resulting liquid work well as ink. And these steps are only the beginning.

The machines used to extract the colourings from the roots, berries, or tree bark are powered by electricity. So we need knowledgeable electricians to equip factories with electrical wiring. Other specialists are required to design the electrical-generating equipment that sends electricity coursing through the factories' wires. In addition to each of these specialists, others must manufacture the wires themselves, a process that involves yet different specialists to find and mine copper, iron ore, and bauxite. And then even other specialists are necessary to perform each of the many steps involved in transforming these raw minerals into copper, steel, and aluminum wires.

And I've so far discussed only the ink. What of the paper? What kinds of trees are used to make it? Where are these trees found? Although neither you nor I know the answers to these questions, *someone* must know. Whoever those specialists are, they are essential to the existence of the printed page now before you.

In addition to those particular specialists, though, the production of paper requires countless other specialists—ones who know how to make the blades for the chainsaws used to cut down the trees; ones who know how to explore for the oil used to make the fuel that powers those chainsaws; ones who know what chemicals, and in just what proportions, must be mixed with the wood pulp in order to transform that pulp into paper; ones who know how to arrange for insurance on the factory in order to make the operation of that factory economically feasible; ones who know how to design, and others who know how to operate, the machines that package the paper for shipment to the printer's workplace. This list of different people each with specialized knowledge and information goes on and on and on.

No single person knows more than a tiny fraction of all that there is to know about how to make the ink and paper that you are now reading. What's more, no single person—indeed, not even a committee of geniuses—could *possibly* know more than a tiny fraction of all the details that must be known to produce the ink and paper that you now hold in your hands. The details that must be attended to in order to produce these products are truly so vast and complex as to be beyond human comprehension.

And yet, here they are—you're staring at them at this very moment: ink and paper.

These goods exist not because some great and ingenious human plan called them into being. Instead, they exist because of a social institution that encourages people to specialize in learning different skills, as well as to learn different slices of knowledge and gather different bits of information about the real world. This social institution also sends out signals to these hundreds of millions of specialist producers, informing each of them how best to use his or her special skills and knowledge so that the resulting outputs of the economy will satisfy genuine consumer demands—and do so at costs that are as low as possible.

If these signals are reasonably accurate, the loggers' activities are coordinated well with those of the paper mill: neither too few nor too many trees are cut down. And the paper-mill's activities are coordinated well with those of the printer: neither too little nor too much paper of the sort that you hold in your hands now is produced. Reasonably accurate signals also bring about coordination of the activities of book publishers and the reading public: the larger the audience for a particular book, the larger will be the numbers of that book that are printed. Books that have too small a likely audience to justify the use of paper and ink to produce will remain unproduced by commercial printers.

Through these signals, therefore, millions of producers all across the globe—business firms, entrepreneurs, investors, workers—are guided to act in ways that "mesh" productively with each other. We get affordable ink and paper—and also automobiles and laptop computers and antibiotics and sturdy housing and supermarkets full of food and department stores full of clothing. The list is very long indeed.

One of the most notable facts of life in modern market economies is that each and every one of the things that we enjoy as consumers is something that no person knows in full how to produce. This fact is true, of course, for marvels such as smart phones and transoceanic jet travel, but it's no less true for mundane items such as ink and paper. The production of each and every one of these things requires the knowledge of thousands or millions or even hundreds of millions of people. Yet there is no overarching plan to make all these activities come together productively.

Of course, each individual worker plans and consciously guides his or her actions. Each individual firm plans and manages its activities. There is conscious planning and adjustment going on at the level of each individual and each firm and each distinct organization. But there is no overarching—no "central"—plan for the whole. No conscious, central plan or blueprint knits each of the millions upon millions of individual choices, actions, plans, and slices of knowledge into the larger outcome of "the economy." That larger outcome is, as F.A. Hayek described it, spontaneously ordered.

But how? What exactly *is* this social institution that coordinates the choices and actions of so many people, each with different slices of knowledge and information, into an overall pattern of activities that works so remarkably well? The answer is voluntary exchange, or markets that are based on private property rights and freedom of contract. That is, for individuals to be able to exchange in markets (sell and buy) they must feel confident in the security both of their own property and that of those they exchange with, as well as in the legal system (contracts) within which they operate. And the prices that emerge on these markets through thousands, even millions of exchanges, are the crucial signals that guide us every day to make those economic choices that result in the complex and highly productive economy that we too often take for granted. Market prices, as we'll see in the next section, guide each of us to act as if we know about—and as if we *care* about—the preferences and well-being of millions of strangers.