I, Pencil: Commentary, Lesson Plan, And Additional Resources

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I, Pencil: Commentary

There are 7 billion people in the world. They have different values, different tastes, and different skills. Over the course of your lifetime, you will probably meet a few thousand of them, and you might really get to *know* a few dozen. Yet, every single day you cooperate with nigh-uncountable numbers of people. You are part of an incomprehensibly complex nexus of trade and specialization that has helped us move from a world where poverty was the norm to a world where some people have gotten fantastically wealthy by historical and global standards. Initially, this spectacular wealth was largely limited to Western nations and a few others. In the late 20th century, the Asian "tigers" joined the ranks of wealthy countries when they adopted free-market institutions. As countries like India and China undertake free-market reforms, they are growing rapidly, as well.[1]

How does this work? Foundation for Economic Education founder Leonard E. Read explained it in his classic essay, *I, Pencil*, which traced the beautiful complexity of the social division of labor that nourishes the "family tree" of a simple pencil. Most of us spend very little time thinking about where pencils come from, taking them for granted. Read showed how, in spite of the pencil's seeming simplicity, no single person knows how to make one. Even a skilled product designer or engineer who might know how to assemble a pencil from pre-existing parts probably won't know how to make the parts—to say nothing of the tools and machines used to combine those materials into the final product.

As Read discusses in *I, Pencil*, the degree of social cooperation required to produce something as simple as a pencil is incomprehensibly complex. Yet, through voluntary cooperation, we are constantly producing new things and coming up with new ways to do things that are beyond the capacity of any one individual. Voluntary trade in free markets—like the Force in *Star Wars*—binds us all together.

What Causes Higher Productivity?

In the opening pages of *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith discussed how the division of labor makes people more productive. Smith identified three channels through which this happens.

- First, it increases our dexterity in the tasks in which we specialize through repetition and learning-by-doing.
- Second, it saves us time because we don't need to switch between tasks as often, which in turns allows us to produce more.
- Third, it encourages people to develop expertise in a particular production process and ultimately develop labor-saving devices.

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[1] See Deirdre McCloskey's *Bourgeois Dignity: Why Economics Can't Explain the Modern World* (2010, University of Chicago Press)

Specializing in a good for which we have a comparative advantage—that is, a good for which we have a lower opportunity cost than our trading partners—allows us to increase our productivity. Both the buyers and the sellers get richer when they can trade voluntarily. Buyers get cheaper goods and sellers earn more than they would if they produced everything they need on their own.

Specialization also allows a division of knowledge that makes us all more productive. As Economics Nobel Prize winner Friedrich Hayek noted, knowledge is dispersed through society, as each person possesses unique knowledge of "the particular circumstances of time and place."[2] This body of decentralized knowledge can never be known by a single omniscient planner. Exchange—and voluntary cooperation more generally—assembles social knowledge and allows people to deploy it for useful purposes. Social knowledge is transmitted through the signals free markets generate—embodied in prices, profits, and losses. The signals from any one transaction are usually too small and too remote to be noticed on a large scale, but they are real. Through voluntary cooperation, we are constantly producing new things and coming up with new ways to do things.

What Signals Guide Entrepreneurs and Managers?

Entrepreneurs and managers are constantly asking themselves: "What do we produce and how?" They appraise their decisions to determine whether they are achieving their goals or need to change course. Resources are scarce. You only have 24 hours in a day. There is only so much labor, there are only so many tractors, there is only so much steel, and so on. While we can always make more, our ability to do so will be limited in the short run. How do we decide what to produce and how to produce it? Do we produce cars or tractors? Do we produce salsa or salad? Which signals guide our decision?

In a free market, the signals are prices, profits, and losses. As economists Tyler Cowen and Alex Tabarrok of George Mason University aptly describe it, a price is "a signal wrapped in an incentive."[3] A price reflects what buyers are willing to pay and sellers are willing to accept in the market for a particular good or service. The price tells prospective buyers what they have to give up in order to get something, and it tells prospective sellers what they can get for something.

Prices help entrepreneurs and managers calculate costs. Profits and losses tell them whether they are choosing wisely or wastefully. A profit is the market's way of rewarding the firm for creating value. It tells an entrepreneur or manager that people are willing to pay more for the product or service than the cost of the resources and effort that went into providing it. Conversely, a loss is the market's way of signaling to

[2] Friedrich A. Hayek, "The Uses of Knowledge in Society," *American Economic Review*, Vol. XXXV, No. 4 (1945), pp. 519-530.

[3] Cowen, Tyler and Alex Tabarrok, *Modern Principles of Economics*. Worth Publishers.

the firm that it is wasting resources and destroying value. It tells a business that people are unwilling to pay for its product or service enough to recoup its costs or turn a profit.

A discussion of Leonard Read's *I, Pencil* can demonstrate how market processes work to create value and meet human needs. Read's classic essay points out, in a concise and accessible manner, how a well-functioning market generates the information needed to encourage detailed and complex cooperation among strangers. As Read makes clear, a pencil, an object so seemingly mundane that most of us rarely think about how it is made is nonetheless "a complex combination of miracles."

Lesson Plan and Discussion Questions

Assignments: Read Leonard E. Read, *I, Pencil* and the accompanying short essay. Watch the *I, Pencil* Movie and interview videos:

Objectives: At the conclusion of the lesson and discussion, students will understand why no single individual has the ability to make a pencil. Students will also be able to explain how prices, profits, and losses coordinate buyers' and sellers' actions. They will also be able to apply what they have learned after reading *I, Pencil* to other goods and services.

In-Class Discussion and Application of *I, Pencil*

Ask students how to make pancakes. This is an open-ended question. People will probably say something like "mix ingredients (eggs, flour, water, salt) and cook." Then ask the following about one of the goods that goes into making pancakes—eggs, in this example.

1. Where do the eggs come from?
2. How do you get the eggs?
3. How do the eggs get from the farm to the store?
4. Do you know how to build a diesel engine?
5. Do you know how to smelt iron into steel?
6. How does it get from the factory to the store?

Besides making pancakes, what are some other uses for eggs?

Eggs can be processed for fast food, to use just one example. If the class clown says something like "egging a house," run with it: What do the prices of eggs at the grocery store reveal about the *opportunity cost* of egging a house? One must give up not only time, but also other uses for the eggs—say, breakfast. Similarly, potential egg eaters compete in the market with those who want to egg people's houses.

How do we decide where the eggs go? Why do they end up at a grocery store and not, say, a restaurant?

Participants in the egg market are guided by prices, profits, and losses. The merchant, anticipating producing output that is worth more than its cost of production, buys eggs and holds them in inventory for you.

What does the merchant need to know about what the customers plan to do with the eggs?
All he needs to know is that people want to buy eggs. He doesn't need to know anything about his customers' motivations or how his customers plan to use the eggs. Whether you're making pancakes or an omelet, or egging someone's house (note: don't ever do this) is of at best minimal relevance to the merchant.

In this way, market prices economize on knowledge. People bidding on eggs constantly compare prices to what they are willing to pay, which is determined by the satisfaction they can get from the egg (or carton of eggs) in question. Sellers, conversely, constantly compare prices to the minimum they are willing to accept for the eggs.

Continued Discussion Questions and Writing Assignments
Let's apply this to the production of some other goods. List 10 people who are involved in the production of the following goods. What are their goals? Why do they do what they do? What signals tell them that they are producing wisely or wastefully? Where do these signals originate?

1. Smartphone
2. French fries
3. Notebook
4. Website
5. Milkshake
6. Book
7. Movie
8. T-shirt
9. Pair of socks
10. Cup of coffee

Here's one example: Consider someone selling t-shirts at the store, perhaps a teenager looking to earn spending money. Her goals might include buying and maintaining a car or saving for college. She can do this by selling you clothes. She works at a clothing store that has hired her because she has a particular set of skills which the store finds useful.

In a competitive market, her wage tells her the value of her services and, presumably, the value of her next-best opportunity. The store learns if it is producing wastefully or wisely by determining whether it makes profits or losses as part of the production process.

Just as the firm doesn't need to know why you are buying the clothes it is selling, you don't need to know the goals and aspirations of everyone involved in the process of providing you a shirt. All you need to know is that they are willing to sell you the shirt

at a price you are willing to pay, and all they need to know is that they can get money from you in exchange for that shirt.

<u>Multiple Choice Questions</u>

1. When two parties trade voluntarily, who "wins" and who "loses"?
    a. The buyer wins and the seller loses
    b. The seller wins and the buyer loses
    c. Both lose
    d. Both win
    e. None of the above

2. Prices, profits, and losses:
    a. Enable rational economic calculation and guide entrepreneurial discovery
    b. Exploit the providers of labor and enrich the owners of capital
    c. Are nice to have if we produce efficiently but are ultimately unnecessary
    d. Can be harnessed by central planners to guide rational production

3. When a firm earns a *loss*, it is:
    a. Wasting resources
    b. Using resources wisely
    c. Revealing an error by consumers
    d. In need of a subsidy
    e. None of the above

4. The knowledge necessary to make a pencil can be known by:
    a. A knowledgeable central planner
    b. The CEO of the pencil company
    c. A very good economist
    d. The President
    e. No one

5. In a free market, you are cooperating with:
    a. Only those immediately around you
    b. The person who buys what you're selling
    c. The person who sells what you're buying
    d. Practically everyone in the world