



corollary

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DISCUSSION & REVIEW QUESTIONS:

- Towards the beginning of the video, Mr. Tamny states, “Income inequality is actually a good thing – when it is the product of a free market economy.” Why do you think that the ‘free market’ caveat is necessary? Why do you think that many people so readily assume that income inequality, or inequality of any kind, is bad or wrong?
- Later, Mr. Tamny explains that, “...in a free society – we can seek out opportunities that play to our personal strengths that distinguish us from others... As long as you have the freedom to guide your own destiny, you have a chance to reach your full potential – achieving success, however you define it.” Why is it important for people to define success for themselves, rather than accept some external notion of what success is for them? Why is the element of freedom so important to the prospect of success? Why do you think that some people desperately seek equality, rather than embracing and making the most of their own uniqueness- their own talents, strengths, perspectives, abilities, and the possible unique happiness and success that could come from the development of their own potential?
- Mr. Tamny expounds on his point further by speculating that, “... if someone, say, a government bureaucrat, told you that your ambition had limits, that there was a ceiling above which you could not rise, I doubt you’d be happy about it... Forced equality means less opportunity to pursue what makes you individually great.” What do you think Mr. Tamny means by ‘forced equality’- what might he be referring to? Would you want the government setting limits on your possible success? Why or why not?
- After giving some specific examples, Mr. Tamny concludes that, “Income inequality makes what once seemed like impossible luxuries available to almost everyone; it provides the incentive for creative people to gamble on new ideas; it promotes personal freedom, and rewards hard work, talent, and achievement...” Do you think that wealthy people being ‘test buyers’ is a positive aspect of income inequality? Why or why not? How exactly might this mechanism of a free market promote personal freedom?
- Towards the end of the video, Mr. Tamny points out that, “...income inequality signals that individual liberty, opportunity, and innovation are all present in a free economy. Pretty good for something that’s supposed to be so bad.” What opportunities exist for people in a free market economy that might not exist otherwise? What is the corollary between free markets and innovation?

EXTEND THE LEARNING:

CASE STUDY: The First Cell Phone

INSTRUCTIONS: Read the article “The First Cellphone Went on Sale 30 Years Ago for \$4,000,” then answer the questions that follow.

- What prompted the first handheld cell phone to be developed? What was Motorola’s reasoning to the FCC regarding why Bell shouldn’t be allowed a monopoly on cell phones? What drove Motorola to produce 8 design iterations of the DynaTAC 8000X?
- If Bell had been granted a monopoly on cell phones too, how might that have affected the development of the modern cell phone? Why do you think that sales of Motorola’s cell phones were so far beyond what they initially projected?
- In the video, Mr. Tamny asks, “So, should I resent the people who became wealthy because they have more money than I do, or should I be grateful for the economic system that allows them to enrich my life and the lives of millions of other people?” How would you answer his question? Explain



QUIZ

INCOME INEQUALITY IS GOOD

1. Income inequality is actually a good thing when _____.
 - a. it is the product of socialism
 - b. the people who are rich are happy
 - c. the government redistributes wealth
 - d. it is the product of a free market economy

2. An economy is made up of millions of individuals _____.
 - a. saving their money
 - b. making decisions about their own lives
 - c. applying for welfare programs
 - d. being told what to buy by the government

3. What products do millions of people enjoy today due to income inequality?
 - a. Cell phones
 - b. Flat screen TVs
 - c. Computers
 - d. All of the above.

4. The freedom to pursue a path in life that you believe best suits your talents is also _____.
 - a. an expression of inequality
 - b. an example of affirmative action
 - c. a good way to become poor
 - d. a byproduct of elitism

5. You can only have a very good life if you are in the top one percent.
 - a. True
 - b. False



QUIZ - ANSWER KEY

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<http://mashable.com/2014/03/13/first-cellphone-on-sale/#1H.Uou8zcaq1>

The First Cellphone Went on Sale 30 Years Ago for \$4,000



Motorola Inc. Chairman and CEO Ed Zander jokingly introduces the 1980s-era Motorola DynaTAC 8000, the first commercially available hand-held mobile phone, during his keynote address at the Venetian during the 2007 International Consumer Electronics Show January 8, 2007.

Image: Ethan Miller/Getty Images

By Stewart Wolpin Mar 13, 2014

Somewhere in either Chicago, Baltimore or Washington, someone plunked down \$3,995 to buy the Motorola DynaTAC 8000X, the first handheld cellphone, on March 13, 1984 — 30 years ago today.

We don't know who that first cellphone buyer was. At the time, the occasion didn't register as historically auspicious. After all, in 1984, the terms "cellphone" and "mobile phone" didn't refer to handheld phones; those terms referred to car phones, which had been around since the mid-1940s. What was celebrated at the time was the kick-off consumer cellular call — made to the great-grandson of Alexander Graham Bell — six months earlier.

A handheld portable phone was considered a gimmick, a "look what I got!" rich man's toy with dubious utility. Measuring 13 x 1.75 x 3.5 inches and weighing 28 ounces, the 8000X was so big and heavy, even its creators had nicknamed it "The Brick." Plus, you could only use it for a half an hour before the battery gave out. Who would pay a quarter of the average salary in 1984 — more than \$9,000 in 2014 dollars — to carry around

such a useless load, especially since payphones were everywhere and only cost a dime to use?

The lack of commemoration of that first portable phone sale is understandable. What has turned out to be the most ubiquitous gadget in history started life as a publicity stunt, prompted by panic.



Businessman using a Motorola DynaTAC 8000X portable cellular phone at Meigs Field airport, Chicago, circa 1984.
Image: Motorola, Inc. Legacy Archives Collection

Ma Bell's monopoly

The cellphone may have had one of the longest gestation periods in tech history. A memo outlining the idea of a hexagonal honeycomb of adjoining antenna sites was laid out in a memo by AT&T researcher Douglas H. Ring in December 1947. At that time and until 1983, car phones transceived via a single citywide antenna that, with limited frequencies, kept the number of subscribers low.

In the mid-1960s, AT&T engineers Joel Engel and Richard Frenkiel perfected cellular technology to allow frequency re-use and call hand-off so you wouldn't lose your call as you moved from one cell to another. These advances geometrically increased the number of potential car phone users.

Once cellular was feasible, AT&T, which already controlled all landline telephone service in the U.S., applied to the FCC for a similar monopoly over the new wireless network.

It was this potential cellular monopoly that threw Motorola, who sold two-thirds of all car phones, into a tizzy.

If Ma Bell was awarded a cellular monopoly, cellular phone equipment would be made by her Western Electric subsidiary — and no one else.

Ruh oh.

Facing corporate oblivion, Motorola executive Marty Cooper had a brainstorm: Let's prove to the FCC that a cellular monopoly would inhibit hardware innovation. What would Motorola's innovation be? A rival cellular network with a handheld phone at its center.

Cooper told his engineers to drop everything. On Dec. 3, 1972, a dozen or so Motorola engineers began the seemingly impossible task of compacting the components inside a trunk-sized car phone transceiver cabinet and roof antenna array so the whole phone could be held in your hand.

Five hectic months later, on April 3, 1973, Motorola hosted a grandiose event at New York's Hilton Hotel to present two hand-built DynaTAC handheld phones to an enchanted press. Since there was no actual cellular network built yet, these first two DynaTACs were actually fancy 900 MHz cordless phones. (Here are the full details of the complete whirlwind DynaTAC development process.)

Whether or not Motorola's dog-and-pony show actually affected FCC's decision to not award AT&T a cellular monopoly is debatable. Bottom line: AT&T didn't get it.

The DynaTAC development interregnum

Fortunately for Motorola, it took nearly 10 years for the FCC to get its cellular regulatory and licensing act together.

"The first [phones] we made were a research product," recalls Rudy Krolopp, Motorola's legendary design master. "The DynaTAC wasn't designed to be manufactured and mass produced. Plus, the FCC was giving us all kinds of problems, so to design something we could manufacture sucked up 10 years. We were very busy."

The most visible design change was re-arranging the two vertical rows of number buttons on the original DynaTAC to the more familiar three-by-four grid. Inside the phone, primary engineer Don Linder oversaw the development of custom integrated circuits and microprocessors — which were still a new product in the late 1970s — as well as evolving antenna designs to better penetrate buildings and account for height changes during a call, all of which had to comply to ever-changing FCC spectrum specifications.

Krolopp recalls the DynaTAC going through around eight different iterations. "Each time we had a problem and solved it, we had to change the design."

In all, Motorola spent an estimated \$100 million to develop the 8000X — with no idea if the public would ever even want one.

The cellular era begins

The FCC gave carriers the final cellular development go-ahead in March 1982. Ameritech, the Chicago-area Baby Bell, was already in the midst of its 18-month AMPS cellular network construction job — 12 antenna sites to service the entire Chicagoland area.

On March 6, 1983, Motorola officially unveiled the DynaTAC 8000X, but it would be seven months before the FCC gave the phone its blessing. On October 12, 1983, Ameritech initiated the first commercial cellular service in the U.S. Service cost \$50 a month plus 40 cents a minute from 9 a.m. to 5 p.m., 24 cents a minute off-peak. Two months later, Cellular One launched its Motorola-designed DynaTAC network in Washington, D.C. and Baltimore.



Motorola DynaTAC 8000X portable cellular phone brochure cover (left) and briefcase compartment product photo (right), circa 1984.

Image: Motorola, Inc. Legacy Archives Collection

Until the 8000X went on sale, the only cellphones you could buy were car phones, priced at around \$2,500.

"We thought sales [of the DynaTAC 8000X] would be modest," admitted Paul Gudonis, Ameritech's VP of marketing and sales and now CEO of medical device maker Myomo. "Our market research on price point indicated buyers would be a select group of entrepreneurs, doctors, real estate agents, construction company owners and large company executives."

Ameritech sold 12,000 cellular phones that first year, around 10% of which were the DynaTAC 8000X. That may not sound like much, but it was more than anyone expected.

"It was the cool factor," Gudonis reasons. "I remember walking to a neighbor's house, and he asked 'Is that a cordless phone?' 'Yes,' I said, 'but the antenna is 10 miles away.'"

From Motorola's point-of-view, the 8000X was a runaway success. "We didn't design them for teenagers — well, unless it was a teenager with \$4,000," Krolopp chuckles. "But we couldn't build them fast enough. Businesses started taking them on and it became something else, a part of business — not a convenience, but a necessity. We didn't expect those kinds of volumes."

Ironically, what had been the primary cellphone product — car phones — have completely disappeared. They've been replaced by the decedents of the Motorola DynaTAC 8000X, an unlikely device born out of panic.



Motorola DynaTAC 8000X commercial portable cellular phone.
Image: Motorola, Inc. Legacy Archives Collection