



**Richard Maxwell, Ph.D. and Toby Miller, Ph.D.**  
Greening the Media

# Who Invented Your Phone?

Was it a giant corporation? A nerdy guy in a shed? A gifted entrepreneur?

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Gossipers and journalists alike—if you can distinguish between them—greeted rumors then announcements this month about the latest variations-on-a-theme from Apple telephony with breathless excitement. A new weight was required when pressing on part of the phone! Astonishing! Hold the presses!

Our collective wonder at these tiny changes is connected to the title of this month's column—regardless of which phone you use. The question it poses invites two kinds of reply. One is to name the company whose trademark gives cultural and commercial meaning to your phone. The other is to dig a little below the trademark. Metaphorically, of course.

The first kind of answer is likely to mention Samsung or Apple, with other possibilities—some way behind in terms of US sales—including LG, HTC, Motorola, Nokia, or Blackberry. Look at your phone and you have a pat response.

The second kind of answer will probably be more abstract and ideological, but equally pat. It goes something like this: 'Laissez-faire entrepreneurialism meeting consumer demand has been the basis for the new digital economy.'

If we expand on that thinking, a clear path opens up, along the following lines: 'As both inventors and consumers, we need to stop the inevitable tendency for government to get involved in regulating, which discourages innovation in this crucial sector of our economy and social and cultural life.'

That short imagined quotation reads rather well, doesn't it? You could find words to similar effect in most periodicals covering technology, or think tanks devoted to it—or indeed in lecture halls and Silicon Valley and Alley.

We are constantly told, in a barrage of rhetoric, that private-sector, for-profit ingenuity is the secret of innovation.

Baloney.

It's time for us to face the truth about how new ideas are created, incubated, and applied on behalf of US industry.

Because many of them come from public culture, public enterprise, and not-for-profits, from universities to the military to tax breaks and many things in-between—and not just courtesy of the USA.

Let's look inside the celebrated mobile music players, cell phones, and tablets of the last fifteen years.

As we lift their lids to examine these devices, their variety and quality are startling. A quick list would probably feature click wheels, multi-touch screens, global positioning systems, lithium-ion batteries, signal compression, hyper-text markup language, liquid-crystal displays, Siri, cellular technology, microprocessors—and the internet itself.

In our last column, we showed how the percentage mark-up business model served to enrich the brand companies whose gadgets we have come to love and depend on.<sup>1</sup> For companies like Apple, huge profits are practically guaranteed by this strategy, which also creates an illusion that high prices and high technology go hand in hand. Combined with influential marketing campaigns, this illusion works something like canned audience applause for brand companies, who seek approval for their wealth through compelling stories of entrepreneurial luck and pluck, ingenuity and innovation.

That brings us back to our original question and the assumption that private business, whether big, small, or medium-sized, created this abundant richness.

In wondering who or what invented, synthesized—and paid for—these things, the popular answers can be guessed pretty easily.

We should thank Apple, Microsoft, Dell or someone like them—or perhaps a nerdy guy with a straggly beard in a shed, badly in need of better personal hygiene—or maybe a giddy entrepreneur burnishing credentials from business school. Right?

Think again, please. These donations to our daily digital lives came from the Defense Advanced Research Agency, the European Organization for Nuclear Research, the Department of Energy, the CIA, the National Science Foundation, the Navy, the Army Research Office, the National Institutes of Health, the Department of Defense—and universities like the ones you attended.<sup>2</sup>

Of course, product development and the selection and combination of hardware and software were achieved by corporations.

But the fundamental research that was smart enough, innovative enough, and free enough of constraints to come up with each part and function derived directly from public initiative, funding, and education.

It's vitally important for the nation's wellbeing and its ongoing prospects for technological development that we bear this reality in mind each time we are told the budget must be cut, corporate-tax rates diminished, or funding for university research reduced. We must also remember the truth of the matter when we are urged by the popular media and business shills to show faith in the dynamism and efficiency of capitalism, as ever compared favorably with public enterprise.

The reality may be uncomfortable for folks reared on the mythology of a truly private sector beating at the heart of the US economy.

But if we are kept in the dark about the realities—and necessities—of corporate welfare, then our national capacity for both basic and applied research will be imperiled. More than that, the companies that benefit so much from it will continue to get free passes come tax time, their comfortable subsidies derived once more from ordinary taxpayers' pockets, without any acknowledgement—or a measurable citizen-consumer repayment on that remarkable public investment.

1. <https://www.psychologytoday.com/blog/greening-the-media/201508/when-soli...>

2. <http://marianamazucato.com/projects/the-entrepreneurial-state/the-entre...>



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