

## Thank You for Being Late, Thomas L. Friedman

How so? “When you press the pause button on a machine, it stops. But when you press the pause button on human beings they start,” argues my friend and teacher Dov Seidman, CEO of LRN,  
Thomas L. Friedman, Thank You for Being Late, pg. 4, loc. 48-49

Wells describes three ways of thinking about a  
Thomas L. Friedman, Thank You for Being Late, pg. 15, loc. 229-230

Wells describes three ways of thinking about a problem: “inside the box,” “outside the box,” and “where there is no box.” The only sustainable approach to thinking today about problems, he argues, “is thinking without a box.”  
Thomas L. Friedman, Thank You for Being Late, pg. 15, loc. 229-231

Intel’s first-generation microchip from 1971, the 4004, and the latest chip Intel has on the market today, the sixth-generation Intel Core processor, you will see that Intel’s latest chip offers 3,500 times more performance, is 90,000 times more energy efficient, and is about 60,000 times lower in cost. To put it more vividly, Intel engineers did a rough calculation of what would happen had a 1971 Volkswagen Beetle improved at the same rate as microchips did under Moore’s law. These are the numbers: Today, that Beetle would be able to go about three hundred thousand miles per hour. It would get two million miles per gallon of gas, and it would cost four cents! Intel engineers also estimated that if automobile fuel efficiency improved at the same rate as Moore’s law, you could, roughly speaking, drive a car your whole life on one tank of gasoline.  
Thomas L. Friedman, Thank You for Being Late, pg. 35, loc. 536-542

“industrial Internet,” also known as the “Internet of Things” (IoT), by enabling every “thing” to carry a sensor that broadcasts how it is feeling at any moment, thus allowing its performance to be immediately adjusted or predicted in response. This Internet of Things, Ruh explained, “is creating a nervous system that will allow humans to keep up with the pace of change, make the information load more usable,” and basically “make every thing intelligent.”  
Thomas L. Friedman, Thank You for Being Late, pg. 46, loc. 701-705

This Internet of Things, Ruh explained, “is creating a nervous system that will allow humans to keep up with the pace of change, make the information load more usable,” and basically “make every thing intelligent.” General Electric itself gathers  
Thomas L. Friedman, Thank You for Being Late, pg. 46, loc. 703-705

If you look at the GE of the past, added Ruh, it was based on mechanical engineers’ belief that by using physics you could model the whole world and right away get insights into how things worked. “The idea,” he explained, “was that if you know exactly how the gas turbine and combustion engine work,  
Thomas L. Friedman, Thank You for Being Late, pg. 47, loc. 720-722

If a cow with a sensor makes a dairy farmer into a genius, a locomotive enabled with sensors is no longer a dumb train but an IT system on wheels. It can suddenly sense and broadcast the quality of the tracks every one hundred feet. It can sense the slope and how much energy it needs to go over each mile of terrain, putting on the gas a little less when it goes downhill, and generally maximizing fuel efficiency or velocity to get from point A to point B. And now all GE locomotives are being equipped with cameras to better monitor how the engineers are operating the engines at every curve. GE now also knows that if you have to run your engine at 120 percent on a hot day, certain parts will need to have their predictive maintenance moved up.  
Thomas L. Friedman, Thank You for Being Late, pg. 50, loc. 760-765

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“We are constantly enriching and training our nervous system, and everyone benefits from the data,” said Ruh. But it’s not only the learning you can do with sensors and software; it’s also the transforming you can do with sensors and software together.  
Thomas L. Friedman, Thank You for Being Late, pg. 50, loc. 765-767

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Thomas L. Friedman, Thank You for Being Late, pg. 50, loc. 765-767

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Thomas L. Friedman, Thank You for Being Late, pg. 51, loc. 767

take a dumb locomotive and throw sensors and software into it, and suddenly I can do predictive maintenance, I can make it operate up and down the tracks at the optimal speeds to save gasoline, I schedule all the trains more efficiently and even park them more efficiently.” Suddenly a dumb locomotive gets faster, cheaper, and smarter—without replacing a screw, a bolt, or an engine. “I can use sensor data and software to make the machine act more efficiently as though we [manufactured] a whole new generation,” added Ruh. In a plant, he added, “you can  
Thomas L. Friedman, Thank You for Being Late, pg. 51, loc. 768-772

get tunnel vision into the job you are doing. But what if the machine is watching out for you, thanks to the fact that we will have a camera on everything—everything will have eyes and ears? We talk about the five senses. What people don’t realize yet is that I am going to give the five senses to machines to interact with humans in the same way we interact with colleagues today.” And there’s money in them thar hills—lots of it, explained GE’s CEO, Jeff Immelt, in an interview with McKinsey & Company in October  
Thomas L. Friedman, Thank You for Being Late, pg. 51, loc. 772-776

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Thomas L. Friedman, Thank You for Being Late, pg. 160, loc. 2451

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Thomas L. Friedman, Thank You for Being Late, pg. 161, loc. 2459

treasured old and borrowed new knowledge  
Thomas L. Friedman, Thank You for Being Late, pg. 161, loc. 2467-2467

treasured old and borrowed new knowledge and practice became necessary ...  
Thomas L. Friedman, Thank You for Being Late, pg. 161, loc. 2467-2468

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Thomas L. Friedman, Thank You for Being Late, pg. 172, loc. 2636

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Thomas L. Friedman, Thank You for Being Late, pg. 178, loc. 2723

the population of the world doubled in our lifetimes. Indeed, if we eat enough yogurt, exercise well, and practice yoga, we could live long enough to see it triple.  
Thomas L. Friedman, Thank You for Being Late, pg. 190, loc. 2907-2908

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Thomas L. Friedman, Thank You for Being Late, pg. 193, loc. 2951

rebuild the economy after the 1929 and 2008 crashes,  
Thomas L. Friedman, Thank You for Being Late, pg. 199, loc. 3039-3039

software: think TurboTax for the legal profession.  
Thomas L. Friedman, Thank You for Being Late, pg. 208, loc. 3175-3175

Warren Bennis meant when he once famously observed that the “factory of the future will have only two employees, a man and a dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment.”  
Thomas L. Friedman, Thank You for Being Late, pg. 210, loc. 3205-3207

Auguste said. “In the industrial economy it was physical capital. In the services economy it was intangible assets, such as methods, designs, software, and patents.”  
Thomas L. Friedman, Thank You for Being Late, pg. 222, loc. 3398-3399

For all of these reasons, Bessen concludes: “Jobs are not going away, but the needed skills for good jobs are going up.” And with this new technology platform we’re now  
Thomas L. Friedman, Thank You for Being Late, pg. 226, loc. 3460-3461

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Thomas L. Friedman, Thank You for Being Late, pg. 226, loc. 3460-3463

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Thomas L. Friedman, Thank You for Being Late, pg. 226, loc. 3460-3463

For starters, middle-class jobs are being pulled up faster—they require more knowledge and education to perform successfully. To compete for such jobs you need more of the three Rs—reading, writing, and arithmetic—and more of the four Cs—creativity, collaboration, communication, and coding.  
Thomas L. Friedman, Thank You for Being Late, pg. 227, loc. 3467-3469

*Notes: 1) Skill sets for future jobs*

In the future, a successful cow milker may need to be an astute data reader and analyst.  
Thomas L. Friedman, Thank You for Being Late, pg. 227, loc. 3478-3479

we need to deploy AI to create more intelligent algorithms, or what Reid Hoffman calls “human networks”—so that we can much more efficiently connect people to all the job opportunities that exist, all the skills needed for each job, and all the educational opportunities to acquire those skills cheaply and easily.  
Thomas L. Friedman, Thank You for Being Late, pg. 229, loc. 3501-3503

Turning more forms of AI into more forms of IA is that solution.  
Thomas L. Friedman, Thank You for Being Late, pg. 229, loc. 3505-3506

To help deliver on the latter, AT&T partnered with many universities—from Georgia Tech to Notre Dame to Oklahoma to Stanford to online universities such as Udacity and Coursera—to provide affordable graduate and undergraduate degrees or just specialized training for each one of the skills it needs.  
Thomas L. Friedman, Thank You for Being Late, pg. 233, loc. 3562-3564

*Notes: 1) Learning sources for employees*

“What we have done is to take our best and make it our average,” he said, “and our average is now right up there.”  
Thomas L. Friedman, Thank You for Being Late, pg. 235, loc. 3604-3604

Udacity was founded by German-born Sebastian Thrun, formerly an artificial intelligence professor from Stanford and an expert on robotics.  
Thomas L. Friedman, Thank You for Being Late, pg. 236, loc. 3610-3611

“By January 2016 we had a course online on how to use the TensorFlow open-source platform to write deep learning algorithms to teach a machine to do anything—copyediting, flying a plane, or legal discovery from documents,”  
Thomas L. Friedman, Thank You for Being Late, pg. 237, loc. 3624-3625

*Notes: 1) Check out courses on TensorFlow*

Foldit, the crowdsourcing computer game, that enable anyone to contribute to important scientific research. These are becoming popular learning platforms. Foldit set up an online “game” where anyone could play and win a substantial cash prize by designing proteins.  
Thomas L. Friedman, Thank You for Being Late, pg. 239, loc. 3662-3664

Foldit explains on its site. The game attracted thousands of contestants from all over the world, some with no formal education in biology at all, to compete for the prizes and, in so doing, win not a bachelor of science degree, but a reputational badge that may soon be more meaningful to the marketplace.

Thomas L. Friedman, Thank You for Being Late, pg. 240, loc. 3665-3667

*Notes: 1) Foldit game for designing how proteins fold*

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Thomas L. Friedman, Thank You for Being Late, pg. 241, loc. 3685

In tenth or eleventh grade you take the practice SAT, known as the PSAT. And let’s say, for instance, you scored 1060 out of 1600 on English and math.  
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Thomas L. Friedman, Thank You for Being Late, pg. 246, loc. 3761-3763

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Thomas L. Friedman, Thank You for Being Late, pg. 246, loc. 3761-3764

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Thomas L. Friedman, Thank You for Being Late, pg. 246, loc. 3762-3762

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Thomas L. Friedman, Thank You for Being Late, pg. 246, loc. 3763-3764

*Notes: 1) Sat exam prep on khan academy*

Practice for the SAT—and advice for getting into college—have long, rightly, been thought of as areas where privilege rather than merit matters, where the wealthy have special access.

Thomas L. Friedman, Thank You for Being Late, pg. 246, loc. 3772-3773

LaunchCode.org—told  
Thomas L. Friedman, Thank You for Being Late, pg. 252, loc. 3861-3861

emerged, and where there are even bigger “talent  
Thomas L. Friedman, Thank You for Being Late, pg. 255, loc. 3910-3911

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If someone has the skills—but not the academic pedigree or professional résumé—to be an IT systems administrator or web developer, Opportunity@Work tests them out on its TechHire.org platform, certifies their mastery of skills for various tech occupations, then connects them with the right employers or the right training to earn or learn more.

Thomas L. Friedman, Thank You for Being Late, pg. 256, loc. 3917-3920

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Thomas L. Friedman, Thank You for Being Late, pg. 256, loc. 3917-3920

skills like cooperation, empathy and flexibility have become increasingly vital in modern-day work.”

Thomas L. Friedman, Thank You for Being Late, pg. 259, loc. 3970-3970

Military strategists will tell you that the network is the most empowered organizational form in this period of technological change; classical hierarchies do not optimize in the flat world, but the network does. Networks undermine command-and-control systems—no matter who is on top—while strengthening the voices of whoever is on the bottom to talk back. Social media is good for collective sharing, but not always so great for collective building; good for collective destruction, but maybe not so good for collective construction; fantastic for generating a flash mob, but not so good at generating a flash consensus on a party platform or a constitution.

Thomas L. Friedman, Thank You for Being Late, pg. 294, loc. 4508-4512

*Notes: 1) Social media is good for collective 2) Social media is good for collective Sharing but not for collective building 3) Social media is good for collective Sharing but not for collective building, good for collective distraction but not for collective construction*

"it became clear to me that while it's true that polarization is primarily driven by our human behavior, social media shapes this behavior and magnifies its impact. Say you want to say something that is not based on a fact, pick a fight, or ignore someone that you don't like. These are all natural human impulses, but because of technology, acting on these impulses is only one click away."

Thomas L. Friedman, Thank You for Being Late, pg. 298, loc. 4569-4572

*Notes: 1) Acting human impulses are just a click away brings the danger to very fabric of society*

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Thomas L. Friedman, Thank You for Being Late, pg. 298, loc. 4569-4572

online discussions quickly descend into angry mobs.

Thomas L. Friedman, Thank You for Being Late, pg. 299, loc. 4576-4576

it became really hard to change our opinions. Because of the speed and brevity of social media, we are forced to jump to conclusions and write sharp opinions in one hundred forty characters about complex world affairs. And once we do that, it lives forever on the Internet, and we are less motivated to change these views, even when new evidence arises. Fifth—and in my point of view, this is the most critical—today, our social media experiences are designed in a way that favors broadcasting over

Thomas L. Friedman, Thank You for Being Late, pg. 299, loc. 4577-4580

*Notes: 1) We are forced to conclusions based on false rumors*

We also need to think about effective crowdsourcing mechanisms, to fact-check widely spread online information, and reward people who take part in that. In essence, we need to rethink today's social media ecosystem and redesign its experiences to reward thoughtfulness, civility and mutual understanding.

Thomas L. Friedman, Thank You for Being Late, pg. 299, loc. 4585-4587

*Notes: 1) Crowdsourc fact-checking 2) Crowdsourc fact-checking widelyspread information*

Five years ago, I said, "If you want to liberate society, all you need is the Internet."

Thomas L. Friedman, Thank You for Being Late, pg. 300, loc. 4587-4588

Today, I believe if we want to liberate society, we first need to liberate the Internet.

Thomas L. Friedman, Thank You for Being Late, pg. 300, loc. 4588-4589

Services Committee, James Clapper, the U.S. director of national intelligence, added gene editing—for the first time—to a list of threats posed by "weapons of mass destruction and proliferation." As the MIT Technology Review noted on that day, "Gene editing refers to several novel ways to alter the DNA inside living cells. The most popular method, CRISPR, has been revolutionizing scientific research, leading to novel animals and crops, and is likely to power a new generation of gene treatments for serious diseases. It is gene editing's relative ease of use that worries the U.S. intelligence community, according to the assessment." Clapper's report said: "Given the broad distribution, low cost, and accelerated pace of development of this dual-use technology, its deliberate or unintentional misuse might lead to far-reaching

Thomas L. Friedman, Thank You for Being Late, pg. 305, loc. 4667-4673

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Thomas L. Friedman, Thank You for Being Late, pg. 305, loc. 4667-4673

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Thomas L. Friedman, Thank You for Being Late, pg. 311, loc. 4756-4757

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Thomas L. Friedman, Thank You for Being Late, pg. 311, loc. 4756-4758

Knowledge Is Power

Thomas L. Friedman, Thank You for Being Late, pg. 312, loc. 4775-4775

*Notes: 1) Knowledge Is power*

The combination of failing states and failing agriculture is producing millions of young people, particularly young men, who have never held a job, never held power, and never held a girl's hand.  
Thomas L. Friedman, Thank You for Being Late, pg. 312, loc. 4780-4782

"Each ecosystem, and each organism, is an answer to a set of problems."  
Thomas L. Friedman, Thank You for Being Late, pg. 331, loc. 5063-5063

"In the history of the world, no one has ever washed a rented car." Ownership focuses you on long-term thinking over short-term, and on strategy over tactics.  
Thomas L. Friedman, Thank You for Being Late, pg. 352, loc. 5395-5396

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Thomas L. Friedman, Thank You for Being Late, pg. 352, loc. 5395-5396

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Thomas L. Friedman, Thank You for Being Late, pg. 372, loc. 5699-5699

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Thomas L. Friedman, Thank You for Being Late, pg. 372, loc. 5699-5700

"There is always a lag between an innovation and the apprehension of its consequences."  
Thomas L. Friedman, Thank You for Being Late, pg. 372, loc. 5700-5700

The scalability of individual behavior is both a problem and a solution today. "Individual behavior can now have global consequences. My behavior scales to the world now—and the world scales to me."  
Thomas L. Friedman, Thank You for Being Late, pg. 373, loc. 5710-5711

"Do unto others as you would wish they would do unto you,"  
Thomas L. Friedman, Thank You for Being Late, pg. 380, loc. 5826-5827

*Notes: 1) Do onto others as you have them do onto you*

accelerations—innovation in the building of healthy communities.  
Thomas L. Friedman, Thank You for Being Late, pg. 391, loc. 5995-5996

accelerations—innovation in the building of healthy communities. TWELVE Always Looking for Minnesota Anyone who has grown up in the hills or used to sit by the spring to drink, or played outdoors in the neighborhood square; going back to these places is a chance to recover something of their true selves. —Pope Francis's encyclical on climate change, "Laudato Si'," May 24, 2015 One afternoon in the fall of 2015, while I was writing this book, I was driving in my car and listening to SiriusXM Radio.  
Thomas L. Friedman, Thank You for Being Late, pg. 391, loc. 5995-6002

systole—without relaxation there can be no contraction.  
Thomas L. Friedman, Thank You for Being Late, pg. 394, loc. 6039-6040

So without diastole there can be no systole—without relaxation there can be no contraction.  
Thomas L. Friedman, Thank You for Being Late, pg. 394, loc. 6039-6040

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Thomas L. Friedman, Thank You for Being Late, pg. 426, loc. 6524

Ours was a spanking-new neighborhood  
Thomas L. Friedman, Thank You for Being Late, pg. 493, loc. 7551-7551