
Payden & Rygel
POINT *of* **VIEW**

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Our Perspective on Issues Affecting Global Financial Markets

**GOING UP OR DOWN? WHAT ELEVATORS TELL US ABOUT THE BIGGEST
FACTOR ALTERING THE GLOBAL ECONOMY RIGHT NOW**

Paranoia runs deep about central bankers and politicians, but it's really the algorithms that run our lives. We take the example of a recent elevator renovation at Payden's global headquarters in Los Angeles as a segue into thinking about algorithms and how they are changing the global economy.

Going UP or Down? What Elevators Tell Us About the Biggest Factor Altering the Global Economy Right Now

Algorithms, not politicians or central bankers, rule our world, but we don't think about the software gremlins until things go awry.

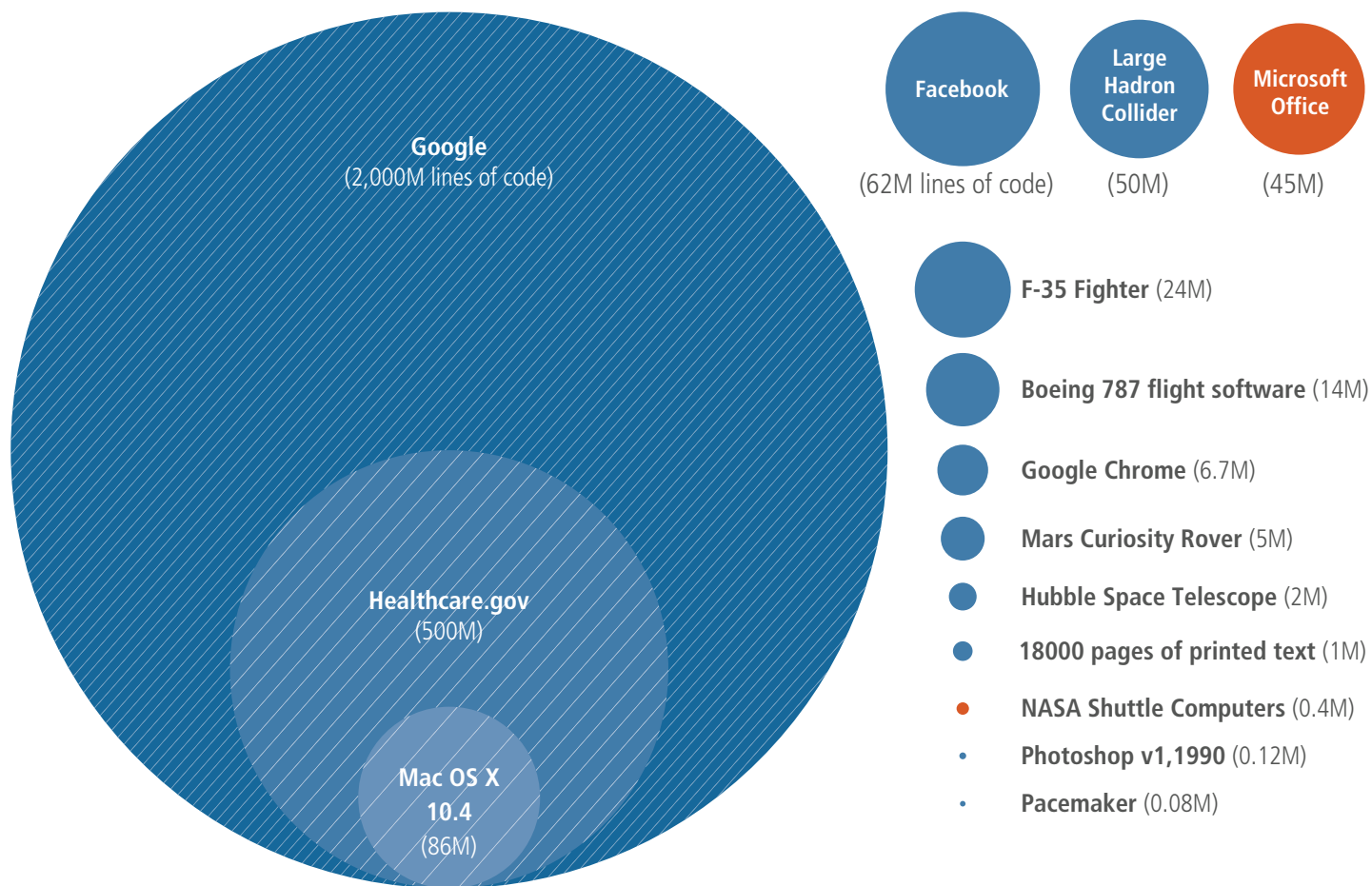
Such an occasion presented itself recently at Payden's Los Angeles global headquarters. Our landlord decided to upgrade the building's elevator system. Instead of passengers piling into the same elevator and only then manually selecting floors, travelers now punch in their destination floor on a lobby keypad and are then assigned a specific elevator car. The "algorithm behind the curtain" sorts and packs passengers in each car to like destinations, optimizing for the most efficient ride to the desired floor.

At least that was the plan.

The new elevator experience exposed much about our present and our future. Below we'll explain what an algorithm is and address many of the major concerns surrounding them. Specifically, the updated elevator system sparked concerns about "giving up control" to machines, disappointment that the "algo" did not always work as expected, and lessons about the interaction between the software and the "real" world.

But, instead of falling prey to the easy argument—that we should fear or regret that we've abdicated control to "the algos"—we come to the opposite conclusion. Algorithms are the instantiation of progress. The obvious human reaction is to oppose them, but algorithms augment specialization. They allow humans to worry about—focus on, fret about, occupy ourselves with—something else. We should embrace

fig.1 HOW MICROSOFT OFFICE IS MORE COMPLEX THAN THE SPACE SHUTTLE: LINES OF CODE IN TECHNOLOGY TODAY



Source: Information is Beautiful

them rather than worrying excessively about them. An elevator ride will make that clear.

ALGO-WHAT?

By now most people have heard of the “algorithms” that trade in the stock market and how “Flash Boys” account for 70% of daily transactions.¹ (See also the Spring 2015 edition of the *Point of View*). Similarly, most people know that their Facebook news feed is optimized by an algorithm, that their Amazon home page is driven by an algorithm and that their Netflix movie recommendations are also the work, yes, of an algorithm. How does Walmart ensure its shelves are stocked with just the right products? An algorithm.²

But what *is* an algorithm? Put simply, an algorithm is a set of instructions to accomplish a task.³ We use algorithms every day: in our morning bathing routine, the manner in which we brush our teeth or comb our hair, the route we follow on our daily commute to the office, how we prepare a sandwich, and our coffee brewing method.

For computers, algorithms become more than just a recipe, they are the most efficient way of accomplishing a task using available resources. For example, your Google Maps application uses an algorithm that finds the shortest route between A and B. An algorithm helps NASA arrange solar panels on the International Space Station given the sun’s rays (an “optimization” algorithm). Computer scientists created a checkers program that never loses. How? It uses “minimax search algorithms” to find the best moves at all times.

But still the process is the same: follow a set of instructions to accomplish a task. The difference is the computer can do it faster, more efficiently and with reliable precision. Rarely do humans achieve such speed, efficiency, and accuracy with their toothbrush strokes. As such, wherever something can be subjected to the tyranny of an algorithm rather than manual human skill and logic, it should be.

OUT OF CONTROL?

Stepping inside the newly-renovated elevator at Payden HQ, passengers first noticed something disconcerting: *there were no buttons*. The elevator was completely automated, sort of like stepping inside a vehicle...without a steering wheel.

It should come as no surprise then that fear quickly set in. “I don’t trust those devices,” a colleague confessed in the elevator one early morning.

Under the old regime—first board elevator, then press button—a passenger had at least the illusion of control. To the human mind, there is

something comforting about the idea that as you levitate toward floor 32, should you choose to do so, you can at the mere press of a button, stop at floor 23 and have a look around. No more. You’re trapped in a capsule bound for your ultimate destination.

But the palpable fear of lack of control is misplaced. The machines are not in charge. Humans still reign. And this is the first lesson of the algorithms.

A century ago, each elevator car required a human operator. Actually, in the early days, an operator *and* an attendant—two humans—would be present, one to direct passenger traffic and the other to actually operate the machine along your journey. The attendant, knowing the names (or at least faces) of each passenger could herd riders into the optimal elevator car. Or, seeing the boss, the attendant might segregate lower level employees into a separate car, allowing the “higher ups” a more peaceful ride to the top without awkward conversation about the families and weekend activities.

“INSTEAD OF FALLING PREY TO THE EASY ARGUMENT— THAT WE SHOULD FEAR OR REGRET THAT WE’VE ABDICATED CONTROL TO THE ALGOS— WE COME TO THE OPPOSITE CONCLUSION.”

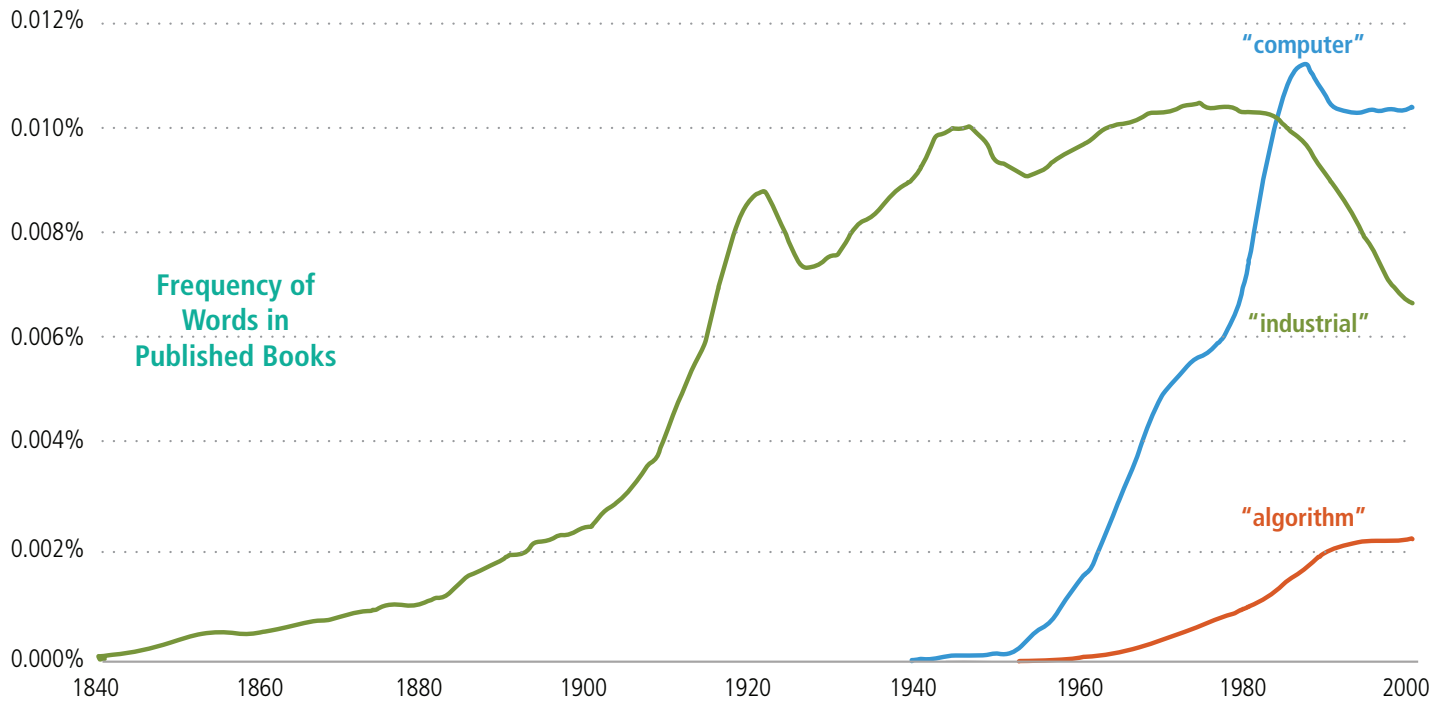
The logic employed by the attendant and operator has been replaced by an algorithm. But ultimately, it’s the act of coming up with knowledge—writing the lines of code (see *Figure 1* on previous page)—that takes manual work. That’s where the human effort remains crucial. That’s where creativity is required. Automating things like elevators is not removing humans from control, it is actually putting knowledge to work. Humans are very much still involved. An algorithm is a product of human knowledge, not an abdication of control.

This is also not the first time elevators sparked fears among riders. About sixty years ago buildings began to switch away from human elevator operators to mechanical push-button “driverless” elevators. Passengers were horrified.⁴ To this day some Manhattan elevators have operators who comfort passengers and soothe their fears.⁵

PACKING THEM IN

Installed in our building’s elevator system is a “destination control” or “destination dispatch” algo. One version, the Swiss company

fig.2 THE INDUSTRIAL REVOLUTION, THEN THE COMPUTER REVOLUTION, AND NOW...THE RISE OF THE "ALGOS"



Source: Google Books Ngram Viewer

Schindler's "Miconic 10," promises fewer crowds in the lobby, a swifter ascent to your desired floor, and fewer unplanned stops along the way.⁶

The old days featured their own moments of annoyance, when an elevator wouldn't arrive for what seemed like minutes, for example. Or when multiple stops occurred *en route*, delivering passengers to floors along the way, like a local subway line instead of the express.

Elevator engineers use "probable stop" tables to gauge the likely number of stops that an elevator will make as it ferries passengers 10 floors above the street. With 10 passengers packed in, 6.5 stops are likely. Many factors are at play, of course, such as how long the doors remain open at each stop, how long they take to close, whether an unruly passenger on floor 9 decides to bring a mail delivery cart up to floor 10, etc.

This so-called "interfloor traffic" (Dear employee on the floor below us: please just take the stairs!) can further delay progress and speed. Once accounted for, the algo should reduce wait times, eliminate unnecessary stops as passengers are packed into cars destined for the same set of floors, and save energy. In short, the algo will seek the most efficient use of resources.

SOFTWARE MEETS REALITY

Of course, even with the new algo, not every ride works optimally. In our elevator bank, a major problem quickly arose: coworkers would

see each other waiting near the elevator bank and assume that the correct destination floor had already been selected. The arriving employee would neglect to key into the lobby terminal, "piggybacking" on a colleague's ride.

As an elevator would fail to arrive, a crowd would form. The lobby security guard once had to alert the crowd around the elevator bank to the problem, exclaiming, "If you do not 'key' your floor into the system, the computer does not know that you are here waiting! Don't piggyback on other people," he admonished the waiting crowd.

«PUT SIMPLY, AN ALGORITHM IS A SET OF INSTRUCTIONS TO ACCOMPLISH A TASK.»

You see, the algorithm—without eyes, ears, or consciousness—had no idea how many passengers were lingering impatiently in the lobby, negating any efficiency an algorithm could provide. Passengers were left quietly cursing technology, even though the problem resulted more from lazy humans than the tireless algo. Once the technology collided with humans in reality, distrust grew out of misunderstanding.

ALL NATURAL, ORGANIC

Why the lack of trust for technology? We distrust because we love the natural; we abhor the synthetic. Organic food thrills and demands a

price premium, while we turn up our noses to anything “processed” or chemically-enhanced. We wield the same prejudice against the algorithms.

But as Nobel laureate psychologist Daniel Kahneman remarked, “Fortunately, the hostility to algorithms will probably soften as their role in everyday life continues to expand. Looking for books or music we might enjoy, we appreciate recommendations generated by software.”⁷

Further, humans are “incorrigibly inconsistent in making summary judgments of complex information.”⁸ If we are to make progress, humans will be removed more and more from the loop. Despite concerns, algos already surround us, are a force for good, and will make your life better (despite your annoyance). This is not a utopian dream. It’s progress. And, in fact, it is the only way progress occurs.

THE ALGOS: THE CURRENT STAGE OF ECONOMIC DEVELOPMENT

Consider the broader scope of economic development for a moment. Major developed economies underwent agricultural revolutions (ca. 16th-19th centuries), industrial revolutions (19th-20th), scientific revolutions (mid-20th), and are now in the midst of an algorithmic revolution (1990s-present) (see *Figure 2* on the previous page).⁹

How is an algorithm revolution different than a scientific revolution? In short, “the algorithmic model takes the costly process by which ideas are created, stored, shared, combined and, of course, connected to economic exchange as the central problem of economic life.”⁹ Goods are moved, services rendered, information shared, all based on algorithms.

As you expand your worldview, the more you will realize “they” (the algorithms) are already everywhere. Many of the things transforming the world on the surface—you know, the ones that get all the attention in the press and provide much fodder around office water coolers—are driven by algos: “globalization,” telecom, the “gig economy,” the “sharing economy,” etc, are all just symptoms of the underlying algorithmic upheaval or reshuffling. They are all around us: Netflix, Uber, AirBnb, Spotify, OpenTable.¹⁰

NOW ARRIVING

Just as the overwhelmed elevator attendant would be unable to direct passenger traffic in a massive, modern skyscraper, the world in which we live is *only* possible due to the algos.


So the next time you scoff when Amazon recommends a book you have no interest in reading, remember: it’s tempting to dislike algo-

rithms because they’re not “real”. They don’t behave the way we think they ought to, or we fear we’ve abdicated control. But that doesn’t mean they aren’t doing their job. In fact, it likely confirms that they are. It has always been this way—some system is used to optimize resources.

Algorithms are our past, our present, and our future.

<ding>

<door opens>

“Going up!” 

SOURCES

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