



RITA GUNTHER | MCGRATH

Author. Speaker. Consultant.



Dear Colleagues,

With all the buzz about autonomous vehicles capturing an immense amount of time and attention, it might be worth pointing out that this set of technologies is most likely in the early stages of a true inflection point. Like the Internet of 1995, there are still a great many missing pieces to the creation of a complete ecosystem for autonomous cars. In this newsletter, I'll comment on that and also propose that rather than the "buy something and hope it sticks" approach to autonomy, companies might be better served by taking more of a stepping stone approach to this very uncertain new transportation means.

Autonomous vehicles and the hype cycle?

Many of the technologies behind autonomous vehicles are at the peak of what consultancy Gartner Group calls the "hype cycle," among them technologies for true level 3 autonomy.

A feeding frenzy

In the early days of a major shift, organizations commonly make bigger bets than make sense. In the Gold Rush, after all, the goal was to be the first to stake a claim. However, many a corporate investor has lived to rue the day they aggressively poured resources into nascent ideas that might – but haven't yet - changed the world.



Consider, the current **investing frenzy** related to autonomous vehicles. According to a **Brookings Institute report**, total investment in autonomous technologies topped \$80 billion in the three years from August of 2014 to June of 2017 alone. Everyone who touches the automotive industry, from car manufacturers to auto suppliers, to tech firms are betting big.

Learning the limits of autonomous technology

Autonomous vehicles are now being let loose to mix with human-driven vehicles, other autonomous cars, bicyclists, pedestrians, pets, construction, detours and anything else one might find on a public roadway. While these experiments have shown that autonomous cars can indeed mimic the performance (or even improve on the performance) of human drivers for the most part, they have also shown that even modestly unpredictable situations can throw them off course. One of Google's cars, for instance, was flummoxed by a **bicycle rider** at a four-way stop rocking his bike. More seriously, the nascent technology has led to unexpected and sometimes tragic **outcomes**, including two deaths.

Too early in the inflection point?

We are early in the transition from vehicles owned, insured, parked and driven by people to vehicles that drive themselves. Investing big now, I would argue, is premature. And I'm not alone – the **Gartner Group** places the deployment of truly autonomous vehicles at least 10 years or more into the future, pointing out that the technologies underlying them are at the very peak of what Gartner calls the "hype cycle".

A useful analogy here is to how the internet changed retail. In 1995, when Amazon shipped its first book, observers said the retail environment would be transformed in short order. Consumers would buy anything and everything and enjoy the convenience of having it shipped to their doorsteps. Retailers, heeding the early warnings of their impending doom, rushed into buying .com addresses, setting up web pages, building banner ads and otherwise trying to capture the opportunity this

potential inflection point offered. This is what survivor of all this and AOL Founder Steve Case refers to as the “hype” phase.

Cast your mind back to the Internet of 1995, only 40% of American households even owned a computer. Access to the Internet was via dial-up modem. People didn't know how to pay for things. The shipping costs for an internet good could be more expensive than the item itself. In short, there were a lot of missing pieces to the model. Sadly, a lot of the early retail experimenters drew the wrong conclusion – namely, that this Internet thing was just an overhyped technology. They went back to trying to beat each other up with discounts, sales and coupons and business returned to what they saw as “normal.” There was just one problem – the inflection point was real. High-speed, always-connected modems improved the on-line experience. The ecosystem for ordering, payments and shipping fell into place. Now, conventional retail is in full-scale retreat.

A stepping stone strategy

Although breathtaking advances have been made, the complexity of situations in which driverless cars are expected to operate are something like the Internet back in the days of dialup modems. Every road surface is different, not standardized. People routinely don't behave the way they “should” (by jaywalking or walking where they aren't supposed to). Other drivers can be unpredictable. And the services and other activities that surround driving as we know it – everything from car insurance to liability laws – have not yet been created. Not only that, but the **average age of a car** in the United States is over 11 years, meaning that even if fully autonomous vehicles were offered for sale (to whom? At what price?), it would be a decade or more before the existing fleet were retired.

In short, the ecosystem for fully autonomous vehicles at this stage is incomplete, just as the ecosystem for internet retail in 1995 was incomplete. That doesn't mean that if you are in the auto business, you shouldn't be paying attention – of course you should. It does mean, however, that you need to be careful about making major, irreversible investments under such a high degree of uncertainty. To proceed in such situations, what I call a stepping stone strategy makes a lot of sense.

Stepping stones are investments made when both technological uncertainty and market uncertainty is very high. Technological uncertain involves not only whether a given technology works at all, but also affects the constellation of legal, regulatory, standards and institutional agreements necessary for a technology to be launched. Market uncertainty involves the extent to which end customers will pay for a solution to a problem, how much they will pay, what channel they will use and so on. That's where autonomous vehicles are at the moment.





What
you
don't
want is
to do

nothing. That is the business equivalent of leaving yourself with no options at all, with a looming substantial inflection point just around the corner. You also don't want to over-invest. The stepping stone response is to find a segment of the market that can benefit from deployment of the new technology (or solution) as it exists right now, to address a pressing and costly problem that customers are keenly aware of, and yet for which no alternative solution exists. The stepping stone metaphor is deliberate – what you are looking for is a market that is perhaps not your ultimate target market, but rather allows you to take a step toward that market, building acceptance and an ecosystem along the way.

This is how Radio Frequency Identification (RFID) technology was commercialized – by first using the technology in less challenging environments such as animal ear tags than the ambitious early possibilities envisioned. This is how nano-technology was first built out – not with super-challenging applications like pills that do surgery, but with more reachable ones such as wrinkle-free Docker's pants. And this is how 3D printing began to take root in medical applications, by using the technology and the body's own cells to make implantable organs that would not experience tissue rejection.

Where autonomy pays off, right now

To stake a claim in the autonomous vehicle space, if one doesn't happen to have Ford or Google sized budgets, will require smart and insightful understanding of relevant stepping stone markets that can provide that early point of departure.

- The first criterion is that the problem to be solved has to be extremely costly or painful to potential customers.
- The second is that they have funds to pay for the solution offered.
- The third is that the technology, in its current form, solves the problem.

These guidelines can help your strategists identify the kinds of markets and segments that might be worth early exploration.

Let's take each in turn. What kinds of markets might have costly, painful problems that only an autonomous solution can address? Well, the obvious places to look are those in which the risks of having a human being behind the wheel are much greater than the risks of an autonomous solution. Military markets come to mind, in which the fewer soldiers exposed to danger just to drive a vehicle for some purpose, the better.

Lockheed Martin, for example, is piloting a semi-autonomous solution involving 2 human drivers in a 'lead' vehicle followed by up to 7 vehicles that 'follow' their human leaders. That translates to 14 fewer humans put at risk just to get vehicles from point A to point B, a considerable benefit. A second application Lockheed is exploring is what they call the Squad Missions Support System. essentially a small vehicle that

acts like a robotic Sherpa, traveling with troops and hauling supplies and equipment without tying up a soldier to do the driving. Guaranteeing safe supply lines and reducing the risks of people involved has enormous value.



Does the military have the funds to pay for a solution that potentially saves troop lives and enhances its fighting capability? Absolutely. That meets our second criteria. And our third is met by the willingness of the **military** to use technologies that are somewhat – but not completely – autonomous as major benefits can be derived regardless. Thus, while the capabilities of the technology are not yet sufficient for these vehicles to be running around city streets on their own, they are well enough developed to deliver valuable benefits to a controlled, military application.

A final thought on the opportunity represented by autonomous cars is that, manufacturers are starting with the current situation and extrapolating forward from that. What we are basically seeing is a car (which itself was derived from the ‘horseless carriage’) with lots of tech strapped to it. It is, nonetheless, still a car. If you were to attempt to gain the benefits of autonomy beginning with a blank sheet of paper, my recommendation would be to start fresh, without the legacy of what a “car” means in the existing regime. In fact, it would not surprise me at all if the benefits of autonomous vehicles first made their appearance in technologies derived from robotics, rather than the automotive industry.

WHAT WE'VE BEEN TALKING ABOUT

HR Leaders podcast- I spoke about The Implications of Innovation for HR Growth Strategies. You can have a listen [here](#).

The Truth About Innovation in Large Organizations - Harvard Business Review Facebook Live (March 30) – you can view it [here](#).

Business of Software webinar with Michael Sikorsky, CEO of Robots & Pencils (April 9) was a great 'hangout'. We discussed "What is an Inflection Point? And, how can software companies take advantage of them?" View it [here](#).

Sally Helgesen's book launch (April 12) Sally's mission is 'to help women recognize, articulate and act on their greatest strengths' and her new book **How Women Rise** explores specific behaviors that get in women's way as they seek advancement and offers powerful solutions to help women realize their full potential. It's a must read!

Engage / Innovate Webinar (April 19) If you're intrigued by the 3 Levels of Business Models, you can view the webinar [here](#).

New Research

The March – April edition of Strategy + Leadership features new research by myself, Alexander van Putten and Ron Pierantozzi (two colleagues with whom I have long worked in the area of strategic growth). In it, we describe how to judge the credibility of a company's growth strategy with a measure we call The Imagination Premium™. It explains some counterintuitive movements in the stocks of Amazon, Walmart, Tesla and Buffalo Wild Wings. You can find a link to the article [here](#).

UPCOMING EVENTS

Leading Strategic Growth and Change (May 7 - 11, 2018)

My [course on innovation](#) and growth is currently running this week! I'm delighted that **Future Partners** the "Think Wrong" company driving the next generation of design thinking will be joining us. They will be working with our participants to learn how to apply the fast-paced and energizing properties of design thinking to the challenges they bring to the course. Also new for this edition is a business simulation of **discovery driven planning** which lets our participants experience the reality of the technique, not just read about it in a book. My colleague Alex van Putten, a strategy consultant, will be with us to lead that.



Participants bring a real organizational challenge to the program and work on it throughout the week. Click [here](#) for more information. Or drop me a line at rdm20@gsb.columbia.edu.



Einstein's Alley Future of Work (June 4, 2018)

I'll be speaking at the Einstein's Alley Institute's the Future of Work- Part 4
Leading Your Workforce in Uncertain Times

Managing Talent Deployment in a Tour of Duty World

June 4th, 2018 – 5:00-7:30PM (cocktail reception at 5pm, program to begin promptly at 5:30)

at Miele, Inc. 9 Independence Way (just off Route 1), Princeton, NJ 08540, New Jersey.

We all know, the American workforce of the near future will look nothing like the American workforce of the recent past. Don't miss this opportunity to learn from Rita McGrath, Columbia Business School Professor and world-renowned management expert on helping organizations to develop Innovation and Growth Strategies during times of uncertainty, as she discusses "Managing Talent Deployment in a Tour of Duty World."

As the pace of change accelerates, the way you manage your most important resource – talent – needs to change too. Join us as we discuss how best to motivate and incentivize people and how you may even change the way you think about 'Human Resources.'

This event is limited to 50 people in attendance. [Here's the link to register.](#)

Women in Leadership (June 5 - 8, 2018)

A timely and topical Columbia course is our own [Women in Leadership](#): Expanding Influence and Leading Change. At the June course, we will be joined by [Sally Helgesen](#) who co-authored the book *How Women Rise* with Marshall Goldsmith. Sally will be sharing her research showing how the practices that helped executive women as they began their careers, can become liabilities the further they advance. We will also be joined by Cindy Pace, an Assistant Vice President of MetLife who will share her [organization's journey](#) with respect to diversity and inclusion.

The Drucker Forum 2018 Management: The Human Dimension

"What would robots do if humans took over?"* The joky question posed by Shagun Tripathi at the Global Peter Drucker Forum 2017 raises a fundamental issue. It prompts us to remember that the economy, technology, business and government are not givens – they are shaped by human choice. Yet, it also forces us to recognize that the human perspective has been increasingly sidelined in the way we think about and enact the relations between technology and society, leaving the most precious, human, potential undervalued and underused. "Taking over" means actively shaping the organizations of the future and taking on a different mind-set: should leaders in the 21st century become as good in understanding the human dimension as they are in grasping the latest scientific discovery, technology or management technique? Should they be able to frame challenges differently and ask different questions? At best, should we more actively manage the creation of our own future?

This is an event I've really come to enjoy. Next year marks the 10th annual meeting, and it promises to be a star-studded event at the Vienna Imperial Palace on November 29 and 30, 2018. We've never needed Drucker's wisdom more than now!

Recent Articles and Press Coverage:

- [Three Levels of Business Models](#) - Engage Innovate
- [Innovation: Catching The Next Wave | Hangout Replay with Rita Gunther McGrath & Michael Sikorsky](#) - Business of Software
- [Does Wall Street buy your growth story?](#) - Strategy & Leadership
- [The 250 Most Influential Women Leaders](#) - Rise Global
- [How Universities Should Manage Innovation](#) - Forbes
- [How Small Startups Can Profit From Competitor's Woes](#) - Entrepreneur
- [Clean energy: Tripping the power business](#) - The Economic Times
- [The Implications of Innovation for HR Strategies](#) - HRD Leaders
- [Creating a business culture for co-creation and innovation](#) - Fujitsu I-CIO
- [Big data, IoT or digital media can't save IT cos but this five-point guide can](#) - The Economic Times

As before, where there is uncertainty, there is also opportunity

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We are busy working on a new toolkit which, once deployed, will make it easier for people to put Discovery Driven Growth techniques to work. We're also working on some standalone learning modules and explainers. Stay tuned for more.

Here's to your next advantage!

Rita

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Rita Gunther McGrath
2880 Broadway
Armstrong Hall, 4th Floor
New York, NY 10025

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