

History's Lessons on Competitive Innovation

Unexpected lessons from the interwar period
on how to innovate at speed today.

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Looking back for guidance going forward

We might assume that history has little to teach us about navigating our current situation of technological disruption — Industry 4.0, the internet of things, 5G, AI, machine learning, genomics, robotics — as it intersects with societal and economic upheaval. In fact, the past does offer important lessons, albeit from a surprising source.

The 20th century was cursed with two world wars, showcasing the worst of people's brutality, for sure, and also the best of their courage, selflessness, and perseverance. In concentrating on character traits, we risk missing meaningful lessons about how to innovate and invent in periods of stress and confusion. Both the wars and the interwar period were marked by great creativity, demonstrating why we should be concerned about innovation speed for lasting advantage and how to innovate at speed. A dynamic of rapid exploration and experimentation outperforms a more deliberative approach; this was true then and remains particularly relevant in today's era of abrupt change.

The spring 1940 Battle of France was devastating for the Allies, culminating in an escape from Dunkirk and allowing Adolf Hitler to peacock in Paris in June. Some might guess that the Allies lost because they were outgunned at the outbreak of fighting, but in fact they had superiority in the quality and quantity of men and materiel in 1940.¹ Others might mark the pivot point at the 1938 Munich Agreement when Britain and France believed that allowing the annexation of the Sudetenland would placate rather than embolden Germany. And it's easy to dismiss the Maginot Line as an example of stupidity, but we'll get to that.

In fact, France's 1940 defeat was rooted in deficits of neither capital nor courage, but rather in deficits of curiosity and creativity relative to the German military. The Allies committed early regarding what to do and how and why to do it (focusing on the Maginot Line), whereas the Germans spent the 1920s experimenting with strategy and tactics, on their way to a disruptive innovation of their "business model" — culminating in blitzkrieg tactics.²

Today, comparing something to the Maginot Line is a dismissal of an effort that's obviously wrongheaded. However, when the Maginot Line was designed and built in the late '20s and early '30s, French military and political leaders may well have believed it to be a foolproof solution to the German problem. They'd incorporated the best innovations of World War I into insurmountable fortifications, with the intent that any future German offensive would be forced north to a narrower pinch point where it would face concentrated (and superior) forces. And one might even imagine that the Maginot Line was perceived as being de-escalating, given that its purpose was defensive and its existence would have encumbered offensive maneuvers.

You might think of linking "innovation" and "the Great War" as oxymorons. Books and films like *1917* (2019), *Gallipoli* (1981), and *All Quiet on the Western Front* (a 1929 book made into a movie twice over) acquaint us with images of men mired in mud, beset by hunger, terrified by machine guns and artillery, and fighting nameless battles for gains of inches. We're left to think that senior officers mindlessly threw their nations' youth into an oblitative inferno. Oblitative it was, but it wasn't mindless. Combatants tried to out-innovate each other, but being creative at similar paces meant that they gained only temporary edges.

That temporary gain was at first only positional. In the war's opening, German infantry tried to outmaneuver defenders and closed in on Paris. But the French and British stopped the advance, counterattacked, and commenced the Race to the Sea in September and October 1914.³ In a lethal game of leapfrog, each side alternated in attacking the other's northern flank. Both sides, unable to convert momentary advantage into a decisive offensive, were then subject to counterattack even farther north. Battle lines quickly zippered across Belgium to the North Sea.

When territorial leapfrogging failed, technological and tactical innovation leapfrogging began. Each side dug into trenches, shallow at first, then deeper. They protected trenches with barbed wire and machine guns. To counteract that, “creeping barrages” of artillery were coordinated with infantry advances to destroy obstacles and suppress defensive fire before riflemen could leap into their opponents’ trenches. (Prematurely halting just such a bombardment was a pivot point at Gallipoli.) Forward-positioned troops that were decimated in opening crescendos led to the development of defenses in depth, with reserve troops held relatively safe from artillery fire. Backups could surge and obliterate exhausted foes. Trench complexity required transportation inventions to move men, machines, and munitions; communications methods advanced to coordinate complex logistics.⁴ The technological innovation race on the ground was matched by innovation in the air, with airplanes used first for scouting, then crude bombing, and then to shoot down scouts and bombers.

This was no mindless war; in fact, one could argue that it was a war of great brilliance. But the problem for each side was that they were innovating at the same rate, neither consistently faster than the other. With neither side ever gaining sustainable advantage, only exhaustion determined the end.

The Interwar Invention Period

If the problem during World War I was the inability to gain and hold an innovative edge, it must have seemed to French leaders that the interwar period promised just the breather they needed. German rearmament was limited, so the French could operationalize wartime innovations in the Maginot Line with machine gun posts, artillery, observation towers, communications and underground transportation systems, hospitals, barracks, commissaries, and so forth.⁵

While French leaders tried to operationalize what seemed most effective about trench warfare, the Germans tried to determine what had gone wrong in the early days of the first world war. The Germans didn’t depend on a select group of high-level officers and industry leaders taking a “think tank” approach by deliberating their way to a new tactic, nor did they assume that the answer was (just) technology like planes and tanks. Instead, they started experimenting, quickly, cheaply, and often. Cutouts were mounted on bikes as stand-ins for tanks, and helium balloons stood in for airplanes. With officers and soldiers maneuvering around fields with their “toys” in tow, doing what must have looked like really odd physical training, they experimented their way to the doctrine, tactics, and training for combined arms and maneuver warfare.

When World War II started, Germany was less equipped than and technologically outclassed by the Allies. (It still depended on horse-drawn wagons, for instance.⁶) But what the German military

did have, it had learned how to use more effectively.⁷ In 1940, it flanked the Maginot Line and, rather than attacking through the Low Countries as the Allies expected, came through the Ardennes Forest, a maneuver for which the Allies were unprepared. Although the Allies were equipped with tanks, planes, and artillery, they lacked an understanding of how to use them in a mobile, agile, adaptable fashion. For instance, French armored units didn't have radio but German units did, which created a huge disparity in real-time coordination abilities.⁸

High-Speed Distributed Innovation Today

Comparing Allied and German interwar decision-making offers contemporary lessons for today's technological, societal, and economic turmoil. The Allies showed many hallmarks of established and successful enterprises when operating in stable periods. Decision-making was top down, deliberative, and analytical, leading to firm decisions. Leadership was often granted to those who'd excelled in past campaigns.

In contrast, the German military took a decidedly nondeliberative approach, instead employing distributed and frequent small-scale experimentation in the field. Lessons learned in distributed experimentation were consolidated, synthesized, and systematized as continuously evolving best practices. The German military was uniquely equipped to do this, having innovated the idea of a general staff — a meritocratic, formally selected body charged (in part) with studying various aspects of warfare and professionalizing (and depoliticizing) the officer corps. This energetic learning dynamic led to a dynamic strategy of maneuver warfare (in contrast to positional warfare, like the Maginot Line), which, informed by experience, was continually updated. Beyond the interwar period of innovation discussed here, the German military paused and consolidated lessons learned before redirecting its even more lethal violence westward.

Organizations today are forced to reconsider what business models suit them in a pandemic-changed world. For instance, until recently, retailers depended on anchor stores at malls and their own flagship outlets to drive brand awareness and support sales; amid a pandemic, that already fading model no longer works. Financial institutions once distinguished themselves with in-person professionalism, particularly for higher-end, less transactional matters. Their business models have been upset by low-cost funds, online transactions, and rapid information and data processing for borrowers, savers, and investors alike. Organizations with heavy administrative processes have seen those dismantled by work-from-home arrangements, while other businesses are trying to figure out how to incorporate gig economy freelancers. Those organizations requiring in-person workforces — factories, laboratories, schools, and so on — have had to determine how to meet new requirements for health and hygiene.

How do we find the best path forward? Like many of our predecessors, we're in a period during which the formerly firm assumptions of our organizations' business models are being challenged. Who are we trying to serve? What problems do they need help solving? What do solutions look like, and how can we deliver on whatever we designed?

In a time of such great uncertainty, it's tempting to look to the past for answers going forward. One can imagine today's leaders poring over reports, crunching data, and conducting analyses, hoping that somewhere in the past they'll find a hidden answer for the future. Impatient for the definitive plan that they can type up and ship out to the field, they may hold their lieutenants accountable for adhering to the schedule — much like one might imagine French leadership gauged progress on the Maginot Line based on cubic meters of concrete poured, miles of wire strung, and the number of planes built.

Alternatively, we could follow the model of those who were wary that previous strategic and operational models, even successful ones, could provide sufficient guidance for the future. In banking, leaders in this camp are likely giving latitude to individual branches to experiment with alternative approaches to creating valued banking services. In retail, they're creating frequent micro-experiments online and in person to supplement or even replace the branding in brick-and-mortar stores. Leaders of factories and labs have been collaborating with their workforces — hourly and exempt, unionized and not — to develop, test, and rapidly modify operational practices. Schools that started running pilots in the spring with in-person and distance learning, synchronous and asynchronous modules, traditional didactic and flipped-classroom approaches, are more likely up and operating with some hybrid models than those that spent the previous months planning without experimenting.

This forward-looking camp of leaders, in short, are generating ideas and creating opportunities to test them on a small scale — one team, one branch, one brand, one store, one web page — before making any large-scale commitments. Their measure of progress is less about material production (whether figurative or literal) and more about ideas offered, tests run, lessons learned, and ultimately the number and yield of learning cycles.

Their examples offer questions we can ask ourselves in order to successfully innovate now. Which assumptions were taken as givens in our previous models, both strategic (what to do and why to do it) and operational (who should do it and how)? What alternatives to those givens should we entertain? Where, when, and how can we test these alternatives on a small scale for rapid feedback? How will we monitor, measure, and mine what is going on in various locales so our collective understanding is improving?

The flush of success can lead us to (over) invest in what has worked in the past while ignoring vulnerabilities that could impact what might work in the future. While some belabor the innovation process with complicated designs and production-ready plans, others are willing to race around fields with helium balloons and wooden cutouts, using iterative processes to test and fine-tune new approaches. To get ahead and stay ahead, we need the dynamic capacity to continuously find what's flawed and replace it with something better.

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References

1. J. Holland, "The Rise of Germany, 1939-1941: The War in the West" (London: Transworld Publishers, 2015); and D.E. Johnson, "Fast Tanks and Heavy Bombers: Innovation in the U.S. Army, 1917-1945" (Ithaca, New York: Cornell University Press, 2003).
2. J.S. Corum, "The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform" (Lawrence, Kansas: University Press of Kansas, 1992).
3. Much of the following account was informed by Williamson Murray's "Military Adaptation in War: With Fear of Change" (New York: Cambridge University Press, 2011).
4. For example, chlorine gas from pressure cylinders was quickly countered with gas masks, which in turn were partly countered by chlorine artillery shells. Then came mustard gas, which was a partial counter to goggles and gas masks since it affected exposed skin. All parties achieved the same level of gas offense and defense — at great cost but with no net gain.
5. This assessment depends on the following sources: Corum, "The Roots of Blitzkrieg"; Holland, "The Rise of Germany"; and Murray, "Military Adaptation in War."
6. For details, see Holland, "The Rise of Germany."
7. They didn't stop learning during World War II. After pummeling the Poles in 1939, the Germans paused to reassess their doctrine and tactics before turning their snarl westward; having been stymied by dug-in positions, they repurposed anti-aircraft guns as bunker busters.
8. Corum, "The Roots of Blitzkrieg."

[Competitive Advantage](#), [Innovation Process](#), [Operational Innovation](#), [Technological Innovation](#)