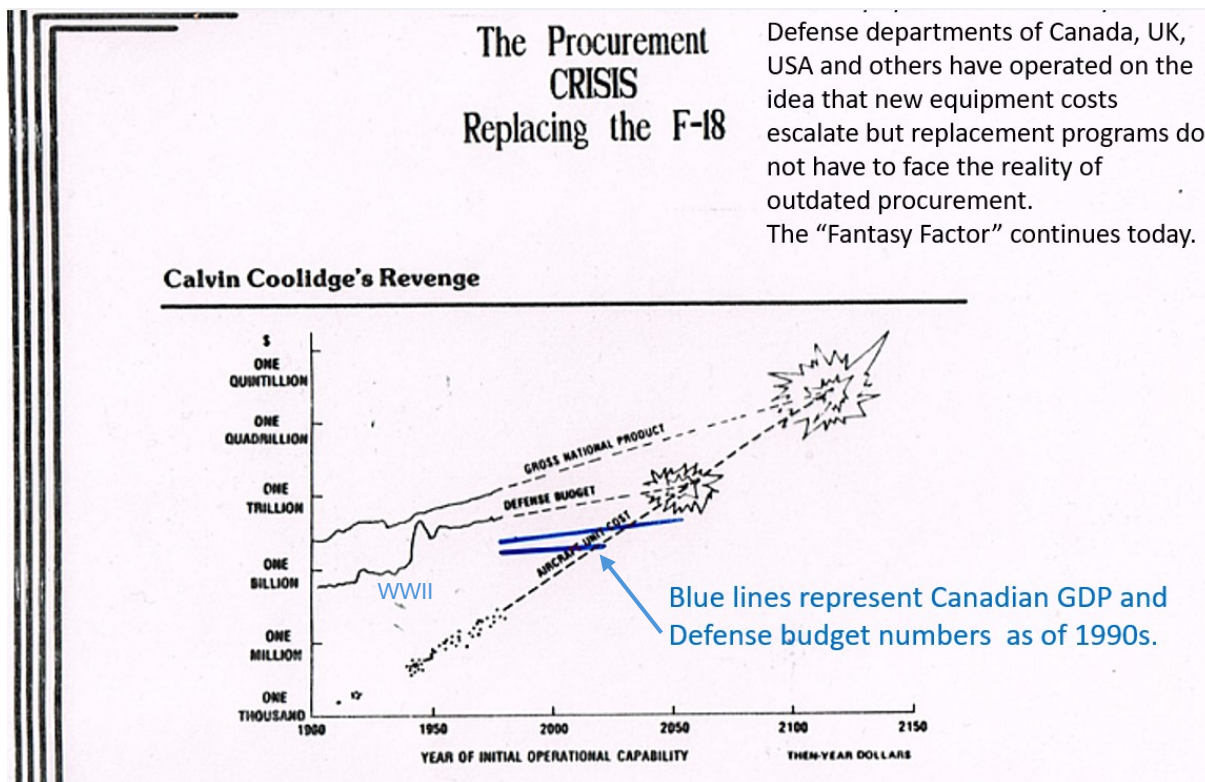


The F35 and THE LAW

The F-35 needs to obey the laws of Physics and if it does not then it will most certainly obey the law of gravity. There are no exceptions. (Witness 28 Jan 25, Eielson AFB Alaska). But ultimately, it must also obey Augustine's Laws. Let me explain.

Norm Augustine, Undersecretary of the Army 1975-77 and served as Chairman and CEO of Lockheed Martin in 1977-87. He was a master Aerospace Program Manager and studied the procurement of fighter aircraft and weapons systems since the Curtis Wright Flyer of 1912 and projected to the early 2000s. He also Chaired the Advisory Committee on the Future of the US Space Program in 1990. A couple of years earlier in 1988, I studied his analysis that he called Augustine's Laws¹. His used real and projected procurement cost from USAF fighter development programs and identified "52 axioms" he said were true laws, as immutable as gravity. There is no getting around the law of gravity anywhere in the universe. Augustine showed the absurdity of pursuing refinement at any cost, by comparing the rate of growth of the cost of new aircraft to the rate of growth of the entire defense budget. He noted that, in the year 2054, the entire US defense budget will purchase just one tactical aircraft. This aircraft would have to be shared by the Army, Navy and Air Force each, 2 days per week, except on Sundays, when the Marines would get it.



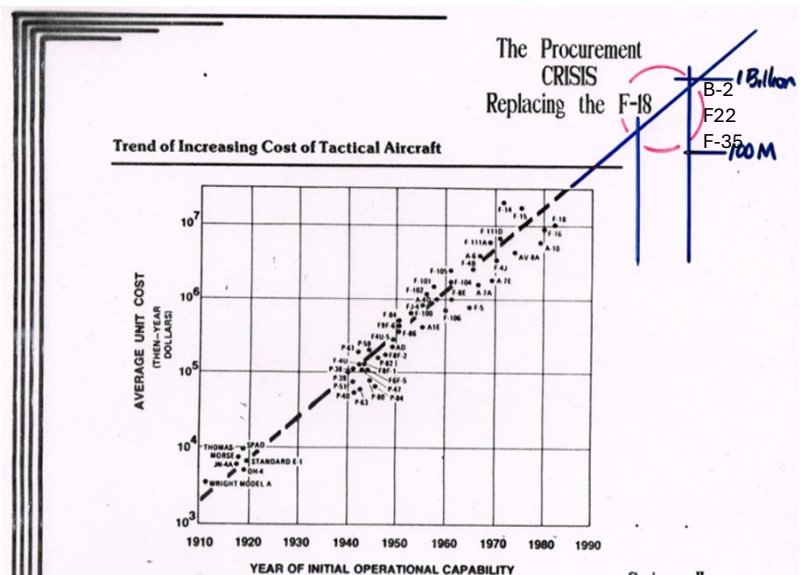
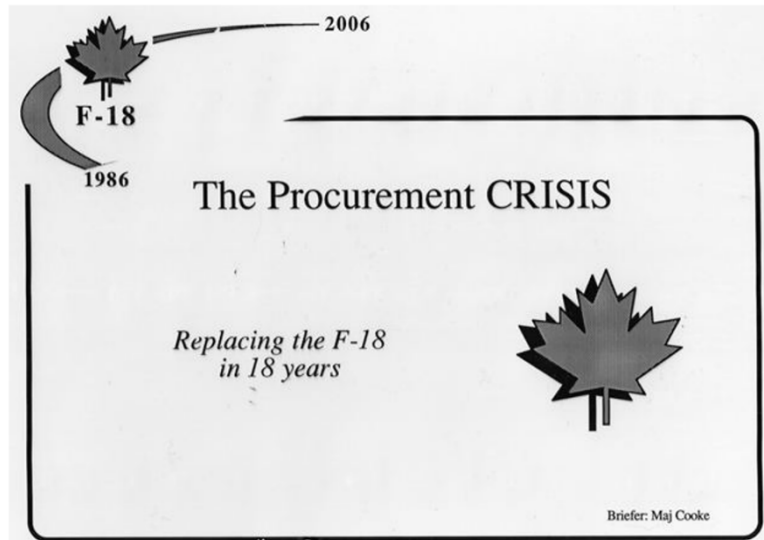
¹ Any project can be completed in exactly 1/3 more time and 1/3 more cost than is currently estimated.

By 1988 Canada had just taken delivery of 138 F-18 Fighters and I stood on the stage at Canadian Forces Staff College, in Toronto, and told my fellow course mates and staff that “The F-18 is the last manned fighter Canada should purchase, and it was now time to design and develop unmanned fighters for RCAF!”.

The graph here is on a log scale² and shows Augustine’s laws at work. New fighter aircraft costs follow a straight predictable “cost curve” that accurately predicts the future cost of new fighter aircraft. Although humorous, and yet literally true, it struck me that this was the reason Canada no longer

owned an aircraft carrier, since 1969. This was simply because the cost for a new carrier by 1975 would have taken 2/3rds of the entire \$3.2 Billion Canadian defence budget (Army, Navy and Airforce)! Instead, over the next decade we bought a Long Range Patrol Aircraft fleet (CP-140 Aurora), 12 Halifax -Class Frigates known as **Canadian Patrol Frigate (CPF)** program, strangely named **TRUMP** for (TRiBial Update and Modernization Project), plus 138 F18s, for less than a Nimitz Class aircraft carrier of the early 90s. So, Augustine’s laws were proven in 1988. Now in 2026, 38 years later, I submit “we are again in the same boat” so to speak, but it’s F-35 boat this time. Considering current political and economic realities, it is time to pivot our Canadian military and industrial procurement strategy once again.

In 1988 I made a simple, data-driven warning to my superiors:



² A log scale is used to best represent numbers when charts cover a wide range of magnitudes where some datapoints are orders of magnitude. Log scales are used when you care about relative, not absolute differences.

Like the aircraft carrier Bonaventure, the F-18 Hornet would be the last manned fighter Canada could afford to buy. Norm Augustine's practical evidence was framed by an immutable "runaway cost curve" of his Law XVI. That satirical 2054 projection was not merely a joke but was a prophecy of procurement insolvency. I argued then that the only escape from this fiscal and strategic dead-end was to leapfrog the technology paradigm by investing in a sovereign, uncrewed future.

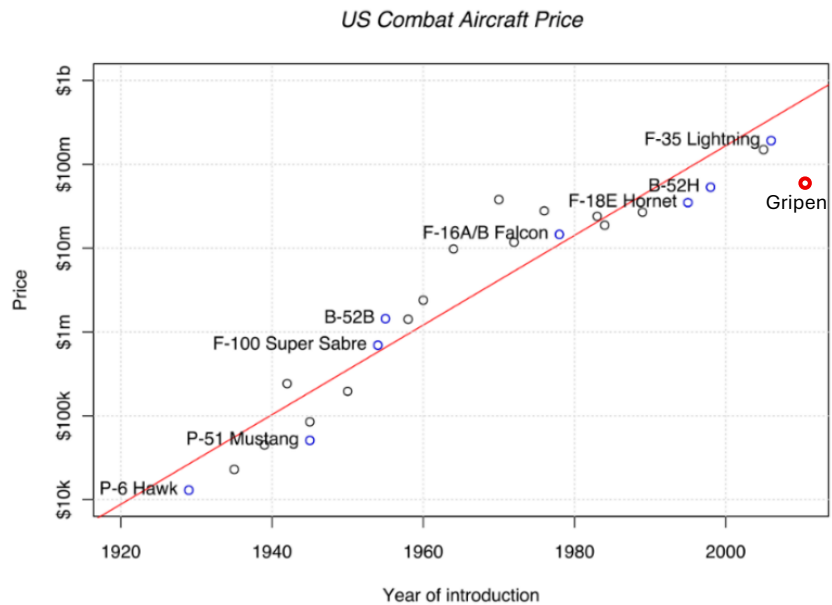
A profound change is taking place in modern warfare ... on land, on sea and in the air...not with more powerful engines, airframes or weapons, but with the pace of innovation and their speed of deployment....and the developers of drone systems are leading the way.

Today, Canada stands at the same inevitable crossroads. The plan to acquire 88 F-35A Lightning II fighter represents not the fulfillment of airpower, but the final, staggering payment on Augustine's bill. We do not need the "penultimate fighter". We need to create our next century of security and prosperity with a bold strategic pivot. The optimal vehicle for this transformation is not the unparalleled technology of stealth, but the brilliantly pragmatic stepping stone of the Saab JAS 39 Gripen. The Gripen is more than a capable fighter aircraft; it's the indispensable industrial springboard to launch and reinvigorate the once landmark Canadian aerospace economy we had in the post war world. Leadership that was once stifled by competing political and military interests from a foreign partner. We must revitalize our aerospace industry centered on autonomous systems, home built expertise, software superiority, artificial intelligence, and cost-effective ingenuity.

**Escaping Augustine's Trap:
The Gripen as a Platform for
Disruption**

The core argument for the Gripen is not that it can out-dogfight an F-35 in a duel—it cannot, and does not need to. Its superiority lies in enabling Canada to escape the economic trap of Augustine's laws. This F35 program model, was my 1988 analysis and it showed that the choice

inevitably leads to a "fighter gap" of a different kind: a fleet so small and costly to operate that it becomes a strategic liability, constantly being defended from annual operating budget cuts rather than extensively used and deployed in defense of national interests.



The Gripen, by stark contrast, is designed for sustainable sovereignty. It's low operating cost frees up vast fiscal Operations & Maintenance (O&M) budgets and these are not just treasury savings; they are the seed capital for national transformation. This fiscal breathing room allows for higher sortie rates, more training and most critically, parallel investment in the technologies that are *already* defining modern warfare: attritable uncrewed systems on land, sea and in the air.

The war in Ukraine is not a preview of the future; it's the reality of the present. It demonstrates that quantity, innovation, adaptability and cost-exchange ratios have dethroned sophisticated war machines as the ultimate power. Ukrainian forces, iterating drone designs in weeks, are destroying multi-million dollar strategic military platforms with systems costing a tiny fraction of their targets. This is the inversion of Augustine's curve on an impressive scale. Canada's future strength lies not in buying a handful of exquisite \$100 million precision fighters, but in having the industrial capacity to produce our own fighters along with thousands of intelligent, networked and autonomous systems for a fraction of the cost. F-35 is certainly a fighter pilot's dream, but it's time to wake up and face the LAW!

Building the "Uncrewed Arsenal": The Gripen as Mothership and Mentor

This is where the strategic genius of the Gripen procurement unfolds. It is not an either-or choice between a fighter and drones; it is the deliberate selection of the fighter best suited to lead and enable a drone-centric force.

First, as a **combat-proven "mothership"** within a networked swarm, the Gripen is rivaled by few opponents. With advanced datalinks and open-architecture systems designed for seamless command and control of unmanned assets, it's potential is unlimited. Imagine a single Gripen pilot managing an "all Canadian team" of Loyal Wingman drones—one equipped for electronic warfare, another for anti-armor seekers, a third optimized for long-range radar patrol over our Arctic approaches. This multiplies the sensor coverage and weapon effects of a single platform exponentially, while keeping the human pilot "in or on the loop" at the center of the mission. The Gripen's short takeoff and landing capability further enhances this, allowing it to operate from dispersed, austere locations, alongside its robotic teammates, a crucial advantage for defending Canada's vast geography and resources.

Second, and more profoundly, the Gripen is the ideal **industrial and technological mentor** for building our own uncrewed systems. The proposed partnerships with Saab and Rolls-Royce includes building and maintaining the Gripen E and it's critical flight and communications software by Canadian programmers. This is *the* critical advantage. Domestic production is not about assembling knocked-down kits; it is about embedding

Canadian engineers, technicians and programmers in the entire lifecycle of a cutting-edge, networked weapons systems designed for more than war fighting. It transfers the tacit knowledge of systems integration, mission software development, and sensor fusion—the very competencies needed to design and build our next generation of Uncrewed Combat Air Vehicle (UCAVs), seaborn anti-ship drones/subs, and long-range patrol platforms, Loyal Wingman, A/A Refuelers and ELINT along with Autonomous Strike.

This directly aligns with the federal government's stated Defence Industrial Strategy, which aims to use defence investment as an "economic lever" and build "sovereign capabilities". By "designing, building, and partnering" with Gripen, Rolls Royce and other companies, including some in the US, we do more than procure a very capable aircraft; we catalyze an aerospace ecosystem . We create the high-skill jobs and supply chains that then feed programs like the Department of National Defence's own "Drone surge" challenge, which seeks low-cost, attritable systems and aims to "stimulate the growth of Canada's domestic UAS industry and workforce", and the need for robust search and rescue, resource monitoring, climate change and pollution management devices.

Seeding the Peaceful Harvest: From Defence to Prosperity

The ultimate vision extends far beyond the military sphere. The aerospace and AI ecosystem cultivated by a Gripen program will become a national asset. The artificial intelligence managing a swarm of anti-submarine drones in the North Atlantic or under the Canadian arctic ice, is a direct cousin of the AI managing a swarm of autonomous cargo aircraft resupplying remote Inuit communities, or coordinating a fleet of aerial vehicles for precision agriculture and wildfire monitoring and suppression across our boreal forests.

The sensors developed for beyond-visual-range identification can be adapted for ice mapping, climate change and environmental monitoring. The secure, resilient data networks built for combat can become the backbone for critical national infrastructure. This is the "peaceful harvest" of defence-led cyber security innovation. By anchoring this development in a flexible, upgradable platform like the Gripen, we build an industry that is agile, export-focused, and capable of rapid iteration—unlike the monolithic, dependent military/corporate and political structure that comes with the F-35.

Critics cite the loss of F-35 industrial benefits as catastrophic. This is a fear-based argument that cedes our future to a foreign franchise. The work on the F-35 is valuable, but it is largely sub-contracted components piecework. It does not grant Canada the sovereign authority to modify, upgrade, or derive new platforms from the core technology. The Gripen path trades a fragile seat at someone else's table for the tools to build our own table—and then invite the world to trade as equals. Two years ago, Industry Minister Mélanie Joly

declared the need to be "strong and bold" in the face of global protectionism, championing our own companies and demanding industrial reciprocity. There is no bolder statement than choosing the path of technological sovereignty.

Conclusion: A Choice of Futures

The choice before Canada is not merely between two fighter jets. It's a choice between a reckoning with the LAW or setting our own course to future.

Trying to ignore Augustine's laws clearing impossible. We purchase the most exquisite iteration of the manned fighter and we lock ourselves into another 50-year cycle of unsustainable support costs, perpetual maintenance capability gaps, and industrial dependency. I don't accept this Maginot mentality as it becomes increasingly irrelevant to a future of drone-saturated battlescapes.

On the other hand, if we embrace Augustine Laws and his warnings with agility and innovation, we can select the Gripen not as a consolation prize, but as the vital stepping stone to a new defense posture. It is a future where Canadian ingenuity, unleashed by multiple strategic partnerships, that create the autonomous systems needed to defend our sovereignty at a fraction of the cost. It is a future where our aerospace sector becomes a global leader again, with the ethical application of AI and autonomous robotics, and the benefits of spinning off peaceful applications to drive economic growth that will most certainly improve the lives of all Canadians, "A Mari Usque ad Mare . . . Ad Mare",³ including our First Nations partners.

In 1988, I warned the RCAF that the next Fighter aircraft was up against the LAW that cannot be ignored. That day has arrived . . . again! We can either pay for the F-35s and submit to Augustine's laws or we can use the Gripen as the lever to circumvent those laws like we did with the Bonaventure. All the accumulated data since 1988 has only shown these laws to be more compelling than ever, so the moment for visionary leadership is now. I say we outwit the law and choose to build future we control.

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David is a retired RCAF pilot, Combat Flying Instructor, recent UAS Test Pilot and Flight Test Instructor with the International Test Pilots School (ITPS) in London ON Canada. He has been researching and developing drone technology for the Canadian Forces since 1977. With tours in NATO and NORAD he was the first non-US National to earn the USAF Senior Space Badge in 1986 as a satellite analyst and Dep Chief, Space Surveillance Division/DOSS, USAF Space Command 1986. He now promotes his own personal smartphone app - [3D Airmanship for drone pilots.](#)

³ From Canada's Motto adopted in 1867 "From Sea to Sea" . . and I added "to Sea" to include our Northern Territories and Arctic Seas . . . who also have a stake in this decision.