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BEFORE THE CUT: THE GLOBAL POLITICS OF THE F-35 JOINT STRIKE FIGTHER

Workshop on International Cooperation

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Abstract

The F-35 Joint Strike Fighter is a high-calibre international collaboration project that figures in many debates on the emerging structure of international politics. How and why did the U.S. government and the U.S. defence industry enter into a set of international partnerships to develop this weapon system? Conversely, how and why did the partner nations become partners, and what influence, if any, have they had on the program so far? And how have participating governments dealt with the mounting controversies surrounding the new fighter jet? In principle, collaboration projects not only cement alliance ties, but also help offset development costs and increase exports, thus lowering unit costs overall. In reality, the F-35 has so far been a boondoggle. Highly asymmetric by design, the JSF project has proven particularly challenging to partners, especially now that the program's cost overruns, delays, and performance shortfalls have become a regular news item in the mainstream media. A review of ongoing F-35 debates across partner countries suggest that evaluations based on "high politics" considerations implicating the costs and benefits of the U.S. alliance trail well behind those concerning technical issues such as cost overruns, work shares, and transfers of technology. The F-35 is a political hot potato for all participating governments, but in the absence of a fatal cut to the program made in Washington D.C., outright defections are unlikely at this stage.

Before the Cut: The Global Politics of the F-35 Joint Strike Fighter

Srdjan Vucetic

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Before the Cut: The Global Politics of the F-35 Joint Strike Fighter[1]

The United States (U.S.) dominates global defence markets, its position generating sources of influence over its alliance, trading, and co-production partners. At the same time, strategic and budgetary considerations—including the rising relative cost of defence labour—push U.S. defence production increasingly towards international collaboration. In this short paper, I consider the politics of a high-calibre international collaborative program that has figured in a number of debates on the emerging structure of politics among nations: the F-35 Joint Strike Fighter (JSF). How did this program come about? What motivated the U.S. government to take on partners, and what influence, if any, did partners have within the program so far? Also, how have the partner governments dealt with the mounting controversies surrounding this program? With respect to the first two questions, my goal will be to provide an overview of the program, including the most up-to-date progress report. As for the third question, what interests me—and I recognize the question brings into play a much broader political analysis—is the manner through which partner governments have publicly justified participation in a U.S.-controlled weapons program popularly characterized by its rising costs, delays, and performance shortfalls.

All major arms acquisitions involve public exchanges over complex trade-offs between capability, costs, job-creation, and strategy. I suggest that analyzing these exchanges can contribute to the understanding of the politics of arms production and arms transfers. Judging by positions taken by both supporters and opponents across national debates on F-35 acquisition in the 2009-2012 period, partner countries appear mostly resigned to their fates as rule-takers in the program. A coming cut in production quantities will affect them all, but the combination of

[1] For comments on this draft, thanks go to Mark Collins and Dara Marcus. For financially supporting my broader research project on defence issues, I thank the Social Sciences and Humanities Research Council, and the Center for International Policy Studies at the University of Ottawa. A version of this paper was presented at the Institute for Defence and Security Analyses (IDSA) Fellow Seminar, New Delhi, 1 February 2013. For maps, I am grateful to IDSA's Geographic Information Systems Lab.

sunk costs and a mostly tacit "alliance pull" is likely to compel the partners to stay the course, even if it means reducing individual orders by 50% or more. No less important, I find that public expressions of strategy, both grand and bland, trail behind the ostensibly technical minutiae such as overruns, work shares, and transfers of technology. The form of these debates reproduces a strategic status quo according to which military capitalization and the U.S. alliance emerge as two sides of the same coin.

I should like to note from the outset that this paper steers clear from theory and methodology, and that the analysis presented herein is shamelessly parasitic on the work of others. While I have spent time trying to understand the British, Canadian, Dutch, and Norwegian F-35 debates and procurement processes (using parliamentary records, government documents, the mass media, WikiLeaks, as well as interviews), this paper would not have been possible without access to a set of first-class case studies recently completed by my colleagues. Their work is referenced in the pages ahead, and will soon appear in a themed issue of *International Journal* that I have had the pleasure and privilege of co-editing.[2] Also note that the paper is focused on state-to-state interactions to the detriment of an equally global and equally political story that would focus on the interaction among primes, majors, and subcontractors in the defence industry.

A Trillion Dollar Baby—And Then Some

The F-35 program, for good reason, is often described as the "arms deal of the century". In a report published on the last day of 2010, the Pentagon estimated lifetime operating and sustainment costs for the U.S. F-35 fleet—projected at 2,443 units, not including prototypes—at

[2] Kim Richard Nossal and Srdjan Vucetic, "The International Politics of the F-35," *International Journal* 68: 1 (themed issue), forthcoming. Also note that this paper will focus policy-relevant material, while putting theoretical and methodological questions aside.

US$1.45 trillion.[3] Cost analyses of this type are always much-debated—What will be the final size of the buy, domestic and foreign? How does one define lifetime? How reliable will the system be once it enters service? What will be the nature of its deployment?—but undisputed is the fact that the F-35 is one of the biggest weapon programs in modern history, and one of the biggest public procurements in U.S. history. The above number, if true, eclipses (very roughly!) many well-known historical landmarks by orders of magnitude: 100x the cost of the Panama Canal or Boston's Central Artery Tunnel Project, 10x that of the Apollo Project or the International Space Station, and 3x the price tag of the Eisenhower Interstate Highway System.[4]

The F-35's parents are the Pentagon and Lockheed Martin, one of the world's largest defence contractors. The warplane is the result of the Joint Strike Fighter (JSF) program, established in the early 1990s to produce a "fifth generation" fighter aircraft for joint use by the U.S. Air Force (USAF), Navy, and Marines. In November 1996, the U.S. Department of Defense accepted bids from Lockheed Martin and Boeing to develop the prototypes, the former winning the fierce competition in October 2001. The F-35's older—and only—sibling is the F-22 Raptor, a Cold War-era design also developed, produced, and delivered by a Lockheed Martin-led consortium. While the F-35 and the F-22 share many advanced features such as stealth and high-speed networking, the F-35 is a smaller and slower multi-role aircraft said to be capable of replacing no less than five aircraft currently in use by the U.S. military. To that end, there are in fact three different F-35s: the F-35A or the Conventional Take-Off Landing (CTOL) version, intended to replace the F-16 Fighting Falcon and A-10 Thunderbolt; the F-35B Short Take-Off and Vertical

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[3] Andrea Shalal-Esa, "JSF Lifetime Cost Hits $1.45T: Reuters," AWIN First, 29 March 2012, Retrieved on 30 March 2012 from http://www.aviationweek.com/Article.aspx?id=/article-xml/awx_03_29_2012_p0-442332.xml. Compare to earlier estimates in Office of the Secretary of Defense, *Selected Acquisition Report: F-35*. December 2010, p. 53, and General Accounting Office, *Joint Strike Fighter*. April 2011, p. 5.

[4] Comparisons were made in 2007 dollars. For more see http://www.whatitcosts.com/ [Accessed on 3 January 2013].

Landing (STOVL), replacing the AV-8B Harrier II; and F-35C Carrier Version (CV), taking over the F/A-18 Hornet and Super Hornet.[5] At the time of writing, all three versions have completed the critical design reviews and are now in the System Development and Demonstration (SDD) phase. Low Rate Initial Production (LRIP) aircraft are slowly rolling off the line at Lockheed Martin's assembly plant in Forth Worth, Texas, and the final Production, Sustainment and Follow-on Development (PSFD) phase at last appears on the horizon. The U.S. Marines had already announced the establishment of the "first operational squadron of F-35B fighter jets in the world" at their Yuma, Arizona airbase, while instructor pilot training on the Block 1 F-35A progresses at an air force base in Florida.[6]

Unlike the air-to-air F-22, which the U.S. government (indeed, USAF) has jealously kept for itself, the multi-role F-35 was conceived of as a multinational program from the very beginning. Along with the U.S. government, responsible for the overwhelming majority of the budget, the program involves ten partners, whose all-important "levels" of partnership at once relate to the amount of cash invested, the amount of technology transfer and sub-contracting opportunities available, and the schedule of deliveries. Maps 1-3 contain information on the total investments by individuals participants—from the Level 1 UK ($2.billion)to the Level 3 Norway ($122 million)—at the end of the SDD phase in 2008. There is also an oft-forgotten fourth level involving Singapore and Israel, whose governments came on board to the project in February 2003 as so-called Security Co-Operation Participants (SCP).[7] The "joint" in JSF can therefore

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[5] Many would argue – and not just Boeing representatives – that the F-35C works as a complement, not replacement of the Super Hornet. Also note that the F-35 is also known as Lightning II, in honour of the World War II-era Lockheed P-38 Lightning and, here I thank Mark Collins, of the English Electric Lightning, the RAF's first supersonic fighter.

[6] By most reasonable benchmarks, however, none of the three versions of the aircraft will reach the so-called Initial Operational Capability before 2019. Originally, IOC (for the A version) was planned for 2011.

[7] In the production phase, SCDs are not meant to be compensated with contracts (Level 1 only) and subcontracts (Levels 2 and 3) In December 2010, Washington offered Israel 20 "free" F-35s in exchange for a moratorium on

have a double meaning implicating both intra-service roles and internationalized development and procurement. Mirroring the idea of inter-service jointness at home, international collaboration was asymmetric by design,[8] which, as I will show below, is a source of much international and subnational friction.

Relative to the F-22 program and its infamous budget cuts, the JSF program has survived unscathed—for now. At the time of this writing (January 2013), and for the reasons I will discuss in a moment, the F-35 serves a target for overwhelmingly negative mainstream media coverage. Since 2010, many key decision-makers in the U.S. – the president, the Pentagon and Congress – have warmed towards the idea of curbing defence spending as a means to fix America's debt and deficit issues. As a result, the balance of power within and around the "iron triangle"— one of the classic tropes for an ostensibly nefarious network that brings together Congress, the military, and defence industry—may be in flux.[9] Of course, Lockheed Martin and other chief contractors in the program—Northrop Grumman, BAE, and Pratt & Whitney—have no intention of rolling over: November 2011 saw the establishment of a new JSF caucus in the

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settlements in the West Bank. The Israeli government refused. Yaakov Katz, "Israel Offered Free F-35s in Return for West Bank Construction Freeze," *Jane's Defense Weekly*, 19 November 2010. The Singaporean government is reportedly very keen on the F-35B but it has a longer time horizon on the new fighters than all other participants, courtesy of recent and ongoing current fleet upgrades. Belgian membership in the program was noted in a U.S. military bulletin back in 2000, probably by mistake (at any rate, the Belgian government never talked about the putative partnership in public). "Australia, Belgium Enter Joint Strike Fighter Program as EMD Partners," *Inside the Air Force*, 21 April 2000, p.42; and the author's conversation with a Belgian MoD official, November 2010.

[8] Ethan B. Kapstein, "Capturing Fortress Europe: International Collaboration and the Joint Strike Fighter," *Survival* 46: 3 (2004), 137-160. It should be said that the F-35's STOVL capability is a function of a 1995 MoU between the UK and U.S. government, which specified the terms of collaboration, as well as the common interest by the UK and the U.S. Marine Corps in a fifth generation fighter jet with full STOVL capability, which is a distinguishing feature of the Harrier GR7/GR9 and its U.S. AV-8B cousin. Only subsequently in the development phase was it decided that only Level 1 partner would have the authority to influence operational requirements in the program. The author's conversation with a former UK MoD official, July 2012.

[9] Consider the political push for a $500 billion defence budget "cut" over the coming decade. Srdjan Vucetic, "The U.S. Military-Industrial Complex, Part I," *The Disorder of Things*, 17 April 2012. Retrieved on 2 January 2012 from http://thedisorderofthings.com/2012/04/17/what-we-talked-about-at-isa-u-s-military-industrial-complex-part-i/

House of Representatives led by a well-connected Congresswoman from a Texas district in which the aircraft is being assembled.[10]

While the JSF is unique, U.S. interest in co-producing fighter jets internationally is not new. In 1975, U.S. President Gerald Ford toured Europe to gather support for the production (not development) of the F-16, an effort met with successes in the capitals of Belgium, Denmark, the Netherlands, and Norway. Subsequent Congressional developments, namely the amendments to the Defense Authorization Acts spearheaded by Senator Sam Nunn in the 1970s and 1980s, have encouraged more co-production deals with key allies. The rationale is simultaneously strategic and economic: co-production deals cement alliance ties, while also helping to offset development costs and increase exports, lowering unit costs overall.

A systematic study of assorted factors that compelled U .S. officials to seek out co-developers in the JSF program—and why some nations were sought, but not others—is yet to be conducted, but the standard sources suggest that international participation arose from a series of "briefings" to select allies in the late 1990s.[11] Why some nations joined, while others declined is similarly unknown, but behind it are the same push-pull factors of security and political economy. The U.S. alliance and the security guarantees that it brings—or supposedly brings, as some would say—remains a high value good in many countries. I will return to this point below.

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[10] T.W. Farnham, "Caucus forms to save the F-35 from budget cuts," *Washington Post*, 23 November 2011. Retrieved on 22 November 2012 from http://www.washingtonpost.com/politics/caucus-forms-to-save-the-f-35-from-budget-cuts/2011/11/22/gIQA6QDupN_story.html?wprss=rss_politics Also see Christopher Drew, "Costliest Jet, Years in Making, Sees the Enemy: Budget Cuts," *The New York Times*, 28 November 2012. Retrieved on 29 November 2012 from http://www.nytimes.com/2012/11/29/us/in-federal-budget-cutting-f-35-fighter-jet-is-at-risk.html?pagewanted=all&_r=0. Lockheed Martin press releases regularly make a claim that the JSF is being produced across "47 states plus Puerto Rico", supporting over one thousand subcontractors as well as tens of thousands high-skilled jobs with billions of federal government dollars. See, for example, the interactive "Domestic Impact" map on the official website. Retrieved on 1 January 2013 from https://www.f35.com/building-the-f-35/economic-impact/domestic-impact.aspx

[11] *Jane's All the World's Aircraft 2012-2012*, p. 803.

Also important in partnership considerations is access to fifth generation combat aircraft technology and the notion that the aerospace industries in each participant country would benefit from being included in the JSF supply chain. These considerations say nothing of the profits from the potentially significant learning- and scale economies generated by orders coming from non-partner customers, of which Japan is the first.[12] With 3,000+ units to be made and a service run stretching well into the middle years of the century, the F-35 certainly looks more attractive than its competitors. But what if the program does not work as advertised? What I wish to do in the remainder of this paper is consider key dimensions of F-35 politics across partner countries. For organizational purposes, I use the following rubrics: costs and schedule, industry and technology, and strategy.

Time is Money

The F-35 is being produced and evaluated at the same time, which results in frequent changes. The program has been revised and/or restructured at least five times since 2003 with a cumulative effect of embarrassing delays and embarrassingly rising costs. Students of the iron triangle will find no puzzles here, and even *Defense Industry Daily* describes this particular production policy – the technical name is "concurrency" – as "a form of 'political engineering' designed to make cancellation too expensive for politicians, even if it leads to sharply higher final costs, or hurts the future fleet."[13] The U.S. government estimates a cost of $223 million per

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[12] On 19 December 2011, the government of Japan announced that it had selected the F-35 as its new fighter jet. Atsushi Tago and Srdjan Vucetic, "The "Only Choice": Canadian and Japanese F-35 Decisions Compared," forthcoming in *International Journal*.

[13] Retrieved on 12 January 2013 from http://www.defenseindustrydaily.com/F-35-Lightning-The-Joint-Strike-Fighter-Program-2012-07501/ High level of "concurrency" was planned from the start. Also note that The latest operational test report cited numerous problems with sensor fusion and the airframe. DoD, "The F-35 JSF Operational Test and Evaluation Report (FY 2012)." Retrieved on 13 January 2013 from http://timemilitary.files.wordpress.com/2013/01/f-35-jsf-dote-fy12-annual-report.pdf

copy for the latest batch (average for all three models), but Lockheed Martin officials and other program supporters are quick to note that the actual "production unit costs" would be around $100 million—and possibly lower for customers buying the F-35s at the so-called peak production sweet spot.[14] While there is still too much political and technological uncertainty in the program to confidently estimate unit prices for Buyer X in Year Y, there is no question that partner countries are price takers in this deal. In fact, the underlying pricing structure might be such that "[wh]atever the US may decide (to increase the budgetary envelope for the program or order fewer aircraft), partner countries risk paying far more than promised or anticipated."[15]

That delivery and cost overruns have dominated the F-35 debates is unsurprising. No government can be comfortable with an expensive program that is constantly hobbled by technical and other kinks slowing production and inflating costs, much less a government operating in an era of austere defence budgets and aging military fleets. Maps 1-3 constitute snapshots in life of the program at the time of this writing (January 2013), and the figures presented therein—namely the status of all proposed or expected "orders" for the stealth aircraft—will be overtaken by events soon.[16] The giant Pentagon order is exactly where it was in 2003, but all eyes await a seemingly inevitable cut.[17] Whatever the nature of the revision/restructuring, it is clear that partners will have little say in it. Despite all the talk of the

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[14] "Latest F-35 Unit Costs Now Exceed $223 million," *Defense-Aerospace.com*; 19 December 2012. Retrieved on 20 December 2012 from http://www.defense-aerospace.com/article-view/feature/141238/**f_35-lot-5-unit-costs-exceed-$223m.html For a discussion of the cost issue, see Mark Collins, "Canada Looking (sort of) Beyond F-35 for New Fighter," 3 January 2013. Retrieved on 24 January from http://www.cdfai.org/the3dsblog/?p=1728

[15] Cédric Laguerre and Marc DeVore, "F-35: Price and Prejudice," *Defense & Security Analysis* 26: 3 (2011), p.333.

[16] Reliable updates are available at the *Defense Industry Daily* website. Last retrieved on 14 January 2013 from http://www.defenseindustrydaily.com/F-35-Lightning-The-Joint-Strike-Fighter-Program-2012-07501/

[17] Drew, "Costliest Jet, Years in Making." For a scathing critique by a long-standing opponent of the program that calls for an out-and-out cancellation, see Winslow Wheeler, "The Jet That Ate the Pentagon," *Foreign Policy*, 26 April 2012, Retrieved on 27 April 2012 from http://www.foreignpolicy.com/articles/2012/04/26/the_jet_that_ate_the_pentagon

multinational nature of the program, the fate of the F-35 depends on the tensile and comprehensive strength of the putative iron triangle, put to test by the political forces bent on tidying up America's fiscal house. But while partners have little or no influence over the political process in Washington, they can and do react to it. A big American cut could meet a dozen smaller cuts elsewhere, and the bad news could pile on quickly. What keeps all F-35 supporters awake at night is the possibility of a "death spiral," whereby cuts would increase unit costs, which would then cause further cuts and so on.

Lockheed Martin officials argue that the F-35 will be sold abroad, but the real extent of non-U.S. orders is almost certainly going to be less than touted and current trends are not encouraging.[18] In 2007, Australia followed the U.S. Navy's lead in ordering two dozen F/A-18F Super Hornets (and now possibly more) as a stopgap or bridging measure; more significantly, Canberra's current order of 14 F-35 As is a far cry from an original plan to buy 100 copies. Meanwhile, the UK has reduced its initial commitment to buy 138 units; the new number of units to be purchased will not be announced before 2015. London's initial commitment to the B version of the aircraft had lasted until October 2010, when the government of the day decided instead to equip the Royal Navy with ostensibly more affordable and more capable "cat-and-traps" C version. But in May 2012, London made a U-turn and reverted to the original plan to buy Bs.[19] Nonetheless, the contours of the final order remain in flux.

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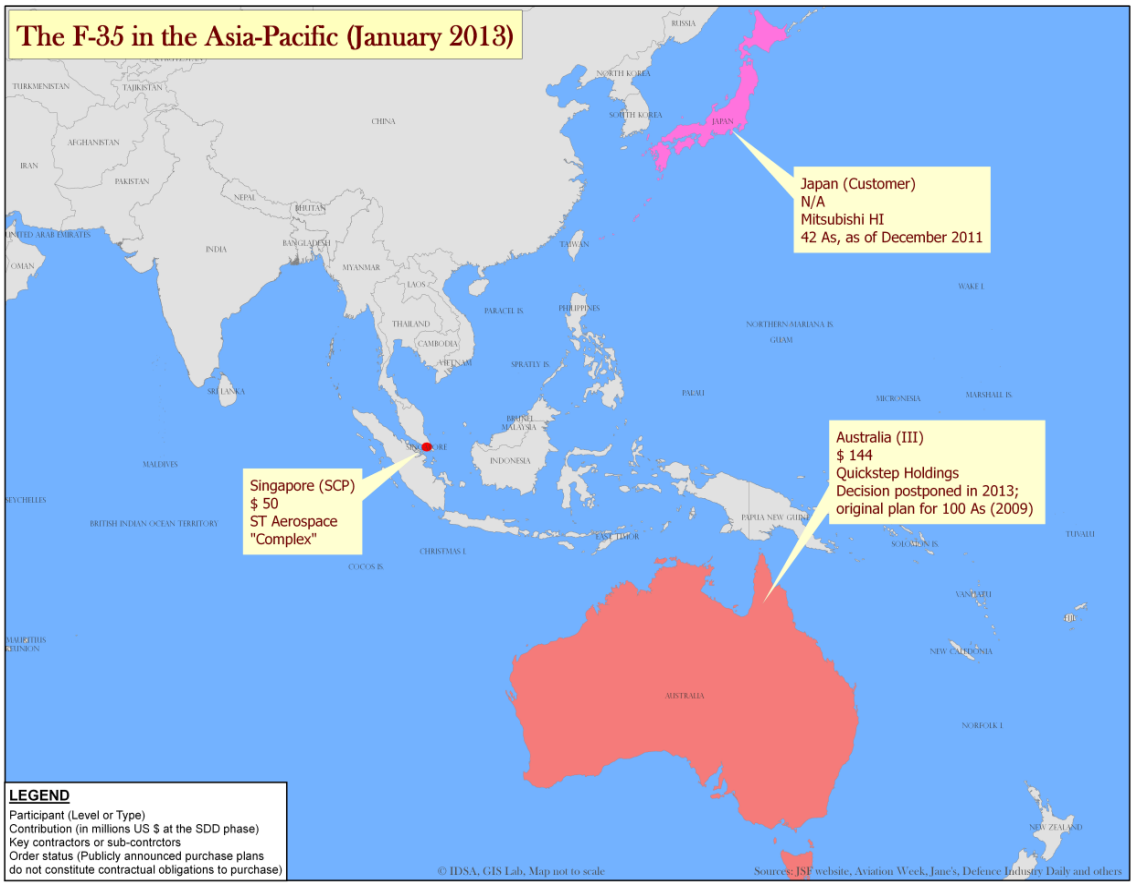
[18] "The Last Manned Fighter," *The Economist*, 16 July 2011, p. 68. According to the latest reports from reputable sources such as SIPRI (*The 2012 Yearbook*) and IISS (*The Military Balance 2012*), military spending is on the increase in Asia, but nothing suggest that South Korea, Taiwan and other potential customers are itching for huge F-35 fleets. For an overview, see Trefor Moss, "F-35: Still on Asia's Radar?" *The Diplomat*, 27 December 2012. Retrieved on 28 December 2012 from http://thediplomat.com/2012/12/27/asia-eyes-f-35s-wearily/?all=true.

[19] Peter D Antill and Pete Ito, "UK Perspective on the JSF Program: the Trials and Tribulations of International Collaborative Procurement," *International Journal*, forthcoming. Note that the first British F-35B made its maiden flight in April 2012.



Italy's planned purchase is now 90 units (both As and Bs since the Italian Navy requires the latter for its new medium-sized aircraft carrier). What remains unclear is where the Italian government will find the billions of dollars needed for this purchase given the dire financial situation in which the country finds itself at the moment.[20] The Danish government recently moved to upgrade its fleet of F-16s, which may further delay the signing of the F-35 purchase contract—if indeed it is the F-35 that prevails in an ongoing procurement competition with the Super Hornet. And in the Netherlands, the F-35 is technically on hold following the publication

[20] Alessandro Marone, "Italy's participation in F-35: rationales and costs," *International Journal*, forthcoming.

of a negative Court of Audits (Algemene Rekenkamer) report on the acquisition process in October 2012.[21]

In the Canadian case, the lessons of the F-35 process may be sufficiently unique as to be inapplicable to other partner countries. Canada's participation in the JSF program goes back to 1997, but its government officially announced the intent to purchase the plane only in July 2010. At this time, four numbers were given: Ottawa was to buy 65 aircraft at a projected cost of US $16 billion, which was said to include maintenance for a 20-year period beginning after 2016, the proposed year of first deliveries. The proposal immediately came under sustained attack, as for the next two years critics demanded the F-35 be treated as an object of study rather than faith. "They were sent out to buy a Chevrolet and they brought back a Ferrari," said then-opposition leader Michael Ignatieff, "And they still don't have the keys to the Ferrari."[22]

The key open question in the Canadian case might be why Ottawa failed to exercise "due diligence" in the F-35 process, but the factor most galvanizing critics since the beginning has been cost. The government and the defence ministry stubbornly stuck by their original estimate even after not one but two budget watchdog agencies duly warned that the numbers did not add up. In December 2012, when a private sector audit pegged the slated F-35 fleet at $45.8-billion over 42 years, the government finally caved and, in its own words, hit the "reset" button on the new fighter. And so, just hours after Lockheed Martin proudly announced that its newest warplane had passed 5,000 flight hours, Canada's *National Post* appeared with a headline: "F-35 Dead in the Air."[23] The stealth fighter jet is not necessarily dead in Canada, but an immense

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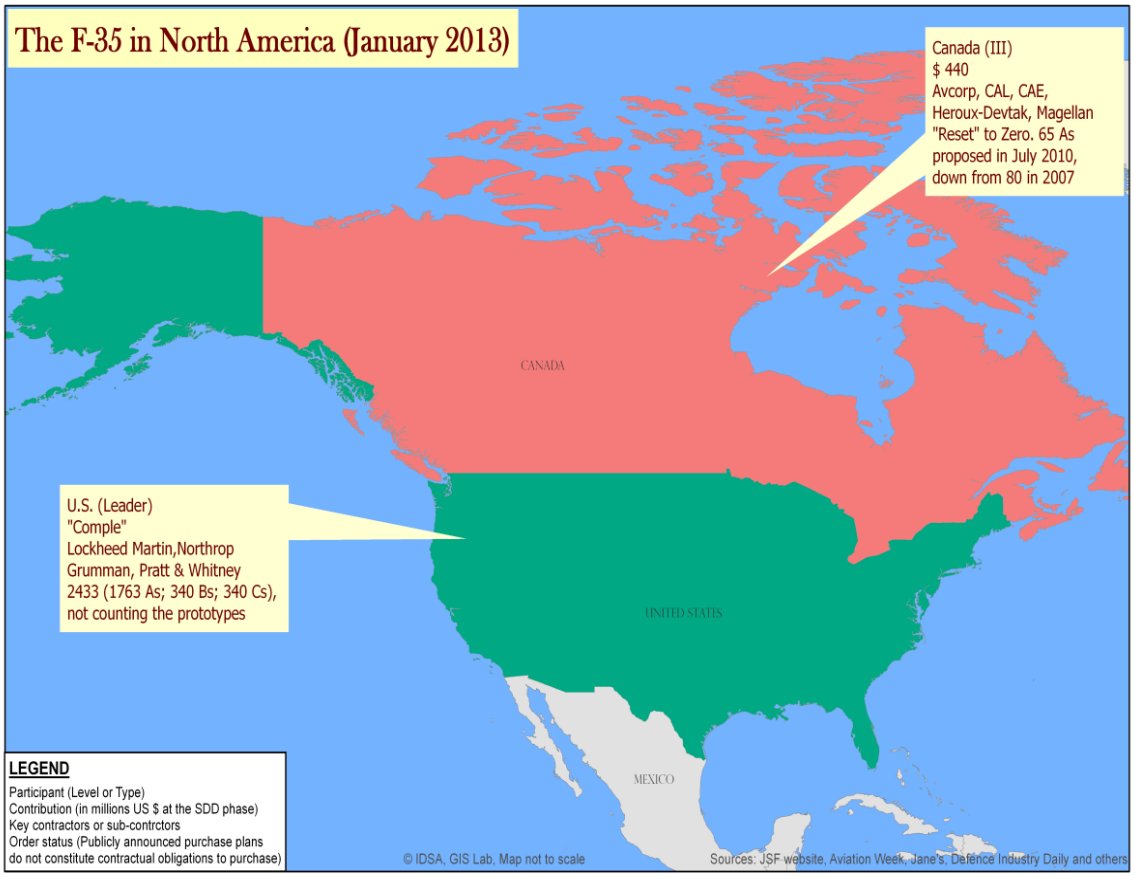
[21] "Nieuw kabinet: eerst vaststellen ambitie en onderzoek exploitatiekosten JSF," JSF Nieuws.nl, 29 October 2012. Retrieved on 30 October from http://www.jsfnieuws.nl/?m=201210

[22] CBC News, "Ignatieff vows to scrap F-35 jet deal," 27 October 2010. Retrieved on 28 October 2010 from http://www.cbc.ca/news/politics/story/2010/10/27/ignatieff-f35-fighter-jets.html

[23] The front page was adorned with Lockheed Martin's own promotional photograph of the F-35 flying into the sunset. *National Post*, 7 December 2012.

amount of political capital will have to be spent to bring it back to life. Like Australia, Canada could yet give up on the idea of a single-type fighter fleet and move to purchase a number of bridging Super Hornets while reducing and postponing the F-35 acquisition.



Lucky for Lockheed Martin, not all JSF partners are cash-strapped or easily subject to sticker shock. In Norway, the F-35 has its cheerleaders in all the right places. In June 2012, the Norwegian government made a formal order for two F-35s, while announcing plans for a total potential order of "up to 52."[24] As for Turkey, Serhat Güvenç and Lerna K. Yanık conclude in

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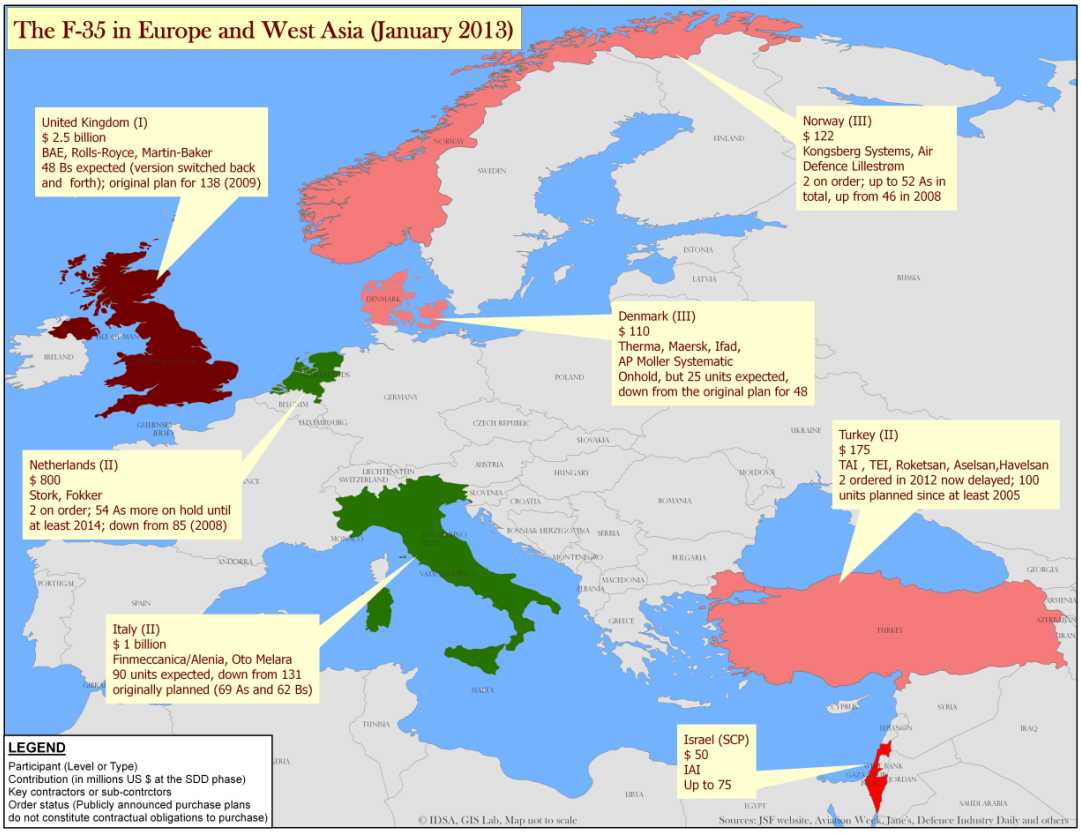
[24] Norway's Ministry of Defence, Press release 58/2012, 15 June 2012. Retrieved on 12 January 2013 from http://www.regjeringen.no/en/dep/fd (English language version). For the complete context, see Jens Ringsmose,

their study that, "the overall cost has remained a secondary concern at the least for the defense industry management and the Turkish parliament; they have cared more about the value of the F-35 contracts awarded to the Turkish companies."[25] This dimension of JSF politics is the subject of the next section.



We Want Jobs…and Source Codes!

In theory, joint defence production brings multiple economic advantages. Why not share costs and risks of developing and producing a high-tech, low-volume weapon system, drawing

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"Investing in Fighter-Jets and Alliances: Norway, Denmark and the Bumpy Road to the Joint Strike Fighter," *International Journal*, forthcoming.

[25] "Turkey's Involvement in the F-35 Program: One Step Forward, Two Steps Backward?", *International Journal*, forthcoming.

on each other's comparative advantages and learning different things from different partners? In reality, co-development projects are usually inefficient, and few programs are able to blunt the sharp edges of the trade-offs between cost, capability, and schedule – witness the Eurofighter Tornado and Typhoon project or the Eurocopter Tiger. In the case of the JSF, it is too early for a meaningful verdict, but it cannot hurt to begin with Keith Hartley's textbook assessment: "International collaboration is dominated by myths, emotion and special pleading, often lacking independent economic analysis, critical evaluation and empirical evaluation."[26]

At its inception, the JSF project was introduced as "offset-free."[27] What all Memoranda of Understandings specify is that work shares are not meant to be proportional to the level of investment in the program; instead intended to follow "best value," as determined by the JSF office. But such fine principles cannot stop politics: across partner countries military procurement is widely regarded as a legitimate form of industrial (and regional) policy, an effect of which is a steady supply of "myths, emotion and special pleading." While several partners have voiced complaints about the fairness and transparency of the best value system, no partner government has declined to declare that it achieves—or would achieve—a positive return-on-investment balance. Suffice it to say, claims of this sort cannot yet be meaningfully evaluated.

The unquestionable winner is BAE, Britain's and Europe's largest defence manufacturer with a major presence in Arlington, Virginia and the biggest non-U.S. industry player in the

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[26] Hartley, *The Economics of Defence Policy: A New Perspective* (London: Routledge, 2011), p. 168. Marc De Vore argues that international collaboration is ineffecient by default because "a stark trade-off exists between states' ability to control principal-agent dynamics and minimize collective action problems." De Vore, "The Arms Collaboration Dilemma: Between Principal-Agent Dynamics and Collective Action Problems, *Security Studies* 20:4 (2011), p. 624.

[27] Offsets refer to a range of compensatory policies and practices in industry and commerce. The slogan "offset-free" was never taken too literally, the main point being that the F-35 consortium would help partners accrue long-term economic and technological benefits over classic offsets, which tend to be short-term and generally ineffective.

program.[28] The silver medalist on the international podium is yet to be determined. The Level 2 partnership paid for by the Italian government is expected to yield it one "regional" Final Assembly and Check-out (FACO) facility, slated to be operated by Alenia Aeronautica at Cameri near Rome. Another heavyweight is Turkey's TAI, having secured a large share of $3.5 billion-worth of F-35 subcontracts related mostly to composites and center fuselage. Although a "mere" Level 3 partner, Ankara has used its bargaining chips wisely: a flirtation with the Eurofighter in 2005 helped, as did the fact that it is looking to buy around 100 new fighters. Politically speaking, Güvenç and Yanık argue, the pursuit of technology transfers has trumped attempts to secure a more beneficial work sharing arrangement, heretofore defined as 50% of the total Turkish investment.[29] Once—or if—the production level increases as expected, there will doubtless be more contention over who gets to make what, when, and in what proportion.[30]

Perhaps the most striking dimension of the program's production asymmetries is the U.S. refusal to share computer software codes—the famed source codes—with partners, while also ensuring that the rest of the aircraft will be saturated with assorted anti-tampering devices. Work is currently underway on the "final" block of the 10 million line-long code for the F-35's onboard computer. This particular task has proven to be extremely challenging, and is vital to effectively integrating the fighter's 130 individual subsystems. By design, software manages all but a tenth of the warplane's function and, also by design, the U.S. exclusively manages the software. One source close to the JSF office intimated in 2011: "The officer cited the cable box/channels analogy for hardware/software exports. Every country will receive the cable box

[28] BAE had been collaborating on both multi-role fifth generation designs requested by the Pentagon in the 1990s. On this well-connected firm, see Keith Hartley, "Company Survey Series: BAE Systems PLC," *Defence and Peace Economics* 23: 4 (2012), 331-342.
[29] Güvenç and Yanık "Turkey's Involvement in the F-35 Program." Here, it is possible to speak of a trade-off between jobs and the transfers of know-how and know-why, which can and does open up another level for politics.
[30] "The Dutch have signed an agreement with Italy to help each country get what it wants; Norway was added to that agreement in June 2007," *Defense Industry Daily*, 14 January 2013.

but the United States can control the channels accessed by the F-35 importers."[31] To use a slightly different analogy, the buyer is expected to agree to operate the machine, but forbidden from touching the fuse box.

Although U.S. restrictions in the area of technology-sharing are long-standing and arguably codified in various founding documents of the JSF program, international partners have fought to gain at least some control over technology. The UK in particular has lobbied hard for relaxing these restrictions and called for a preferential treatment on the basis of its top-level partner status as well as its so-called special relationship with the U.S. In the winter of 2005-6, London even threatened to withdraw from the program if not given access to sources codes and other key technologies.[32] There is no evidence that these threats bore fruit, however. What is worth noting is that only some partners (Australia, the UK, Turkey) have publicly protested over the U.S. policy on source codes, while others appear to have chosen to give up the fight early or simply ignore the issue altogether. Such practices of (not) speaking out can be said to both reflect and produce variable hierarchical authorities upon which the U.S. alliance system rests. Let us consider this issue next.

Comparative Strategy

To the extent that the politics of alliances and alignment is heavily implicated in any co-development arms program, it follows that we can learn something about the strength of the U.S. alliance system by observing the public expressions of "strategy" in the course of the F-35

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[31] Quoted in Sarah Kreps, "Arms to Allies: The Determinants of US Arms Exports," unpublished paper, on file with the author. Suffice it to say, Lockheed Martin expects to perform virtually all source code modifications in the U.S. (the Israeli case might be an exception). The U.S. side has repeatedly expressed expectations that all maintenance work – and, in fact, most pilot training – would take place on the American soil.
[32] *Jane's All the World's Aircraft 2011-2012*, p. 806.

debates.[33] What is the new aircraft for comparatively speaking? Judging by the prevailing discourse, the proposed F-35 acquisition is understood to serve as a "contribution to security" or, less often, a "deterrent" of sorts operating within existing alliance structures centered on the U.S.—above all, NATO, but also, in the case of Canada, NORAD or, for Australia, ANZUS.[34] In these institutions, partner country militaries are all heavily internationalized in the sense that "national security" is predominantly understood in terms of the influence that derives from augmenting the alliance through different forms of "burden-sharing" or "out-of-area deployment capability". What is mostly tacit in nature is an understanding that such contributions to regional and/or global security are not simply military in nature, but also high-tech, capital- and firepower-intensive. Also implicit is the idea that conventional military power makes or breaks these contributions. Judging by what is said in parliaments and the media, new fighter jet procurement debates have steered clear not only from venerable nuclear deterrence discourses (a nuclear-capable F-35 *has* been conceptualized, note), but also from explicitly engaging with ongoing revolutions in remotely piloted warfare.[35]

On the American dimension itself, strategy tends to be explicitly articulated by partner states. Clashes of visions regarding the types of roles a country should undertake in strategic

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[33] Here I am sneaking in constructivist theoretical ideas. There are many ways to conceptualize strategy, but at one level – the most fundamental level, a constructivist would argue – all strategic considerations are theorizations about how international conflict and cooperation work or are likely to work in the future. So viewed, coordinating the nation's capabilities vis-à-vis stated missions such as "defending the realm" or "contributing to international peace and security" produces and reflects basic axioms on who and where we are (including variations such as who or where we should be, who or what threatens us, etc.).

[34] The UN also appears, but mostly as an add-on. As for the U.S. security discourse, there Australia stands one of the "leading partner countries to NATO" or "contact countries", alongside Finland, Japan, South Korea and Sweden. Judging by the speeches of NATO secretary-generals (Anders Fogh Rasmussen) or U.S. ambassadors to the same institution (Nicholas Burns), the alliance has around 40 "partners" at the moment. Anne-Marie Slaughter, "Globalizing NATO," 19 May 2012. Retrieved on 12 July 2012 from http://www.project-syndicate.org/commentary/globalizing-nato#HRXyxhJY0DLFEMtY.99.

[35] Consider, for example, U.S. Department of Defense, *Unmanned Systems Integrated Roadmap FY2011-2036* (Publication Ref. 11-S-3613). Washington, D.C., 2011. The modal response among partner countries is that UAVs and UCAVs have a separate role in the said contribution to security.

cooperation with the U.S. seem to be present in every F-35 debate under study, but nothing in the debates suggest weaknesses in the foundations of the American alliance. Allow a clunky statistical analogy: anti-American voices do come from the Left and sometimes the Right, but this asymmetric frequency distribution has a rather fat pro-American middle. Demand for the alliance is especially evident in the ubiquitous deployment of the term "interoperability." A word that entered the English language relatively recently has since become the rhetorical tool of choice for the JSF program supporters in virtually every partner nation.[36] As Ethan Kapstein has shown, there are many forms of operational interoperability,[37] but in the context of the F-35 debates the term usually invokes identicality or commonality, often in a much broader context. What better way of achieving "seamless" or "advanced" interoperability with U.S. forces (the coded phrase is "traditional allies and partners") than by acquiring a weapon system that is used by said forces?

Exalting interoperability is an argument against self-reliance or isolationism, and may also be indicating collective beliefs predominant in partner states on who we are and where we should be in the international arena. For instance, in Canada—where the opponents of the F-35 purchase have exploited every weakness in the government's plan—the fact that interoperability remains discursively untouched may be interpreted as prima facie evidence of ingrained and possibly unconscious tendency of the Canadian elites to support *Pax Americana*. The same holds to varying degrees for Australia, the UK and for the rest of the "Atlanticist" European contingent of JSF partners, whose elites continue to find much national interest in defence

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[36] For the Australian case, see Adam Lockyer, "The Logic of Interoperability: Australia's Acquisition of the F-35 Joint Strike Fighter," *International Journal*, forthcoming.

[37] Kapstein, "Capturing Fortress Europe," p.144. Not only are there many forms of interoperability, but also many levels. The willingness to place troops under another state's command (strategic level) or integrate troops within in-theater allied battle groups (tactical level) also improves interoperability. Possessing identical military equipment as your allies may naturalize the political decisions that lead to multinational command and integration.

cooperation and integration with the U.S.[38] Now we come to a more specific meaning of national security mentioned above. The rationale behind a modal NATO ("global NATO" or "NATO+") member defence expenditure envelope is not understood to relate to the nation's borders or its citizens or those of its allies and partners so much as it is about the military aspects of a "global security" agenda set in Washington, D.C. (Whether, or to what extent, military organizations can and do use this particular defence policy as a way to claim additional power or legitimacy within their own democratic societies is an interesting theoretical question).

Closely related to interoperability is a tacit understanding that the F-35 fleets will be used in U.S.-led expeditionary operations, i.e., as a tool of military "compellence." What the multi-role fighter does best, arguably, is ground attack, not "air sovereignty" or the "defence of the national airspace." In Norway and Canada, advocates for the F-35 have particularly struggled with this fact, especially in the face of the argument that a single-engine fighter jet is not well-suited for operations in the remote and vulnerable areas of the High North.[39] In contexts where the reigning policy statements explicitly underscore "crisis management" and "out of area missions"—and this applies to most NATO members and NATO partners, but not to many actual or potential customers in Asia—the arguments in favour of the F-35 have been comparatively easier to make since the new aircraft is meant to excel in "initial strikes" through and enemy air defences. And this argument appears to be fairly convincing across cases, including Canada

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[38] Giles Scott-Smith and Max Smeets, "Noblesse Oblige: the Dutch participation in the JSF," *International Journal*, forthcoming.

[39] On why stealth is unnecessary in intercepting bombers, see Mark Collins, "F-35: Flim-Flammery from a Senior RCAF General," 27 July 2012. Retrieved on 23 January 2013 from http://www.cdfai.org/the3dsblog/?p=1307/. For lack of space, I cannot discuss "comparative alternatives", and consider how operational trade offs between, say, stealth on the one hand, and speed and range on the other hand were debated in each partner nation at different points of time (other frequently occurring issues with the F-35 include the maintenance-to-mission ratio and the munitions carrying capacity while stealthy, which are both limited relative to many "fourth generation" fighter jets).

where the otherwise shrill debate occurred entirely within an elite consensus on the need for expeditionary warfare capability.

That the air forces want the "very best" equipment for themselves is hardly news, but in this case it can be said that status-seeking behaviour is bolstered by a specified desire to act as a "significant" or "important" contributor in U.S.-led crisis management operations. Most partners are buying F-35 fleets that are too small for most stand-alone missions (even if national strategic doctrines were to somehow permit them), but their military organizations are quick to say that only a fifth generation fighter jet enables participation in air roles "on the first day of attack" (indeed, the air forces in particular cannot seem to get enough the jet's high-end *strike* capability). By no means are all members of the JSF club traditional participants in U.S-led military interventions, but more than a few governments and militaries probably relate the said first-day-of-attack capability to the notion of equitable burden sharing or even the trading of capability for influence among allies. If strategy is about making bets on the future, then it appears that more than a handful U.S. allies are gambling that air strike missions will enable them to play a key role – military as well as political – in the management of global security in the next thirty years or so.

The question of opportunity costs within military organizations—related to the idea of inter-service rivalry—has rarely emerged as a point in F-35 debates across partner nations. This absence is interesting beyond just the politics of defence policy both at the domestic and regional levels. In the face of assorted national and collective initiatives for specialization and coordinated "niche" approaches to defence,[40] it may seem illogical that so many countries within the same well-functioning alliance system would all seek the particular capability associated with

[40] For the Canadian case, see Peter Jones and Philippe Lagassé, "Rhetoric versus reality: Canadian defence planning in a time of austerity," *Defense & Security Analysis* 28:2 (2012), 140-151.

a particular form of overseas coalition warfare. More confounding would be the fact that this capability has had little place in the recent and ongoing U.S.-led anti-terror campaigns and even smaller place in military histories of all F-35 partner countries save the UK. But this should not be surprising from a sociological perspective: "sexy defence" can and in fact does trump "smart defence." Arguably, this type of status-seeking has major ramifications in international life. Calls for more high-end capability, more identicality/commonality, and, for that matter, more industrial and technological integration in U.S.-centric weapons development and production networks all reflect and produce different forms of U.S. power in the world. For one, more arguable still, this push-pull dynamic contributes to "a warped American foreign policy, ready to conceive of problems in military terms and present a ready military solution."[41] Military-industrial networks centered on the U.S. do not *necessarily* "cause" wars—or, for that matter, encourage war-like foreign ideas and policies such as "regime change" or "humanitarian military intervention"—but they do thrive in and undergird a transnational, transgovernmental, and indeed global milieu that valorizes militarism in the broadest sense.

Conclusions

The arguments for and against the F-35 tend to be similar across partner nations. What glues international partners to the program most tightly is the desire for cutting-edge military technologies, defence industry jobs, and, last but not least: status. What dampens enthusiasm, conversely, are the constant media reports on the failures of schedule and affordability as well as the overall program uncertainty. As may be expected in democracies, F-35 debates have been

[41] Fareed Zakaria, "Why Defence Spending Should Be Cut," *The Washington Post*, 4 August 2011. Retrieved on 3 January 2013 from http://www.washingtonpost.com/opinions/why-defense-spending-should-be-cut/2011/08/03/gIQAsRuqsI_story.html

politicized everywhere, but this politicization has neither been particularly broad nor especially deep. Even the shrillest debates have revolved around technical and procedural issues—Canada's due diligence controversy, for example—and in none has there been a significant politicization of opportunity costs, especially those concerning non-defence requirements.

The F-35 program is asymmetrically interdependent by design such that non-U.S. partners have little bargaining power, and therefore little or no influence on the specification of the product. The UK and Turkey have attempted to re-take sovereignty over the technologies necessary for the operation of the new fighter jet, but it appears that the U.S. will get to keep the sensitive source codes, among other technologies, for itself. This outcome should not be surprising, either theoretically or historically.

Schedule and cost overruns have already had an adverse impact on the prognosis of the stealth jet, but they have not been fatal. The dynamic interaction among delays, reductions and costs, particularly against the backdrop of frequent fiscal face-offs in Washington, D.C., will determine what happens next, but all political indicators suggest that the project, at this stage, is too big to fail. After investing millions of dollars of in the development stage, all participants (including the U.S. government above all) have an incentive to go through with the purchase – even if it means paying a price that is much higher (double? triple?) than originally anticipated. A comparative reading of the F-35 debates in partner countries also suggests that the sunk cost argument operates fairly effectively in compelling the stay the course policy. Recent "resets" and "reboots" in Canada, Denmark and the Netherlands indicate that defections from the program may be possible. On current trends, most partners will probably keep paring their orders down, and some will also follow Australia in hedging against the F-35 by investing in an interim (and probably U.S.-made) fighter fleet. Having said all this, a big cut in the Pentagon

order—thinking here of an F-22 scenario in which production numbers are reduced by two thirds or so—would radically change the economic calculus for the program and could lead to multiple and complete "refusals to buy" by the partners.

But herein lies the main lesson for the students of the structure and processes of international politics: high-flown as it would doubtless be, even such a worst-case scenario would *not* spell significant trouble for America's alliances and partnerships criss-crossing the globe. For all the friction in relationships between the U.S. and its partners caused by the JSF, American strategists can take solace in the fact that the chattering classes in all partner countries continue to offer a fairly unambiguous recognition of U.S. authority and status as the "leader." More diverse evidence—a lot of it!—is needed to bolster this big-picture strategy argument, but I believe it is safe to end this paper with this: as far as the so-called traditional allies are concerned, there is no imminent erosion in the American imperium.

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