



When inspiration fails to inspire: A change of strategy for the US space program[☆]

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ABSTRACT

A pressing issue facing the US space program is the projected shortfall in the skilled aerospace workforce, as the number of students in space-related fields wanes. This has prompted many to emphasize the rhetoric of inspiration that prevailed during the Cold War, at the expense of concrete arguments for space that are thought to be lackluster and insufficient. This essay argues that the logic of inspiration fails to consider the changed context and attitudes of this younger public. Instead, such an approach proves counterproductive in attracting generations compelled by a host of ideas, some incompatible with the rhetoric of competition and prestige that prevailed before. Arguments that draw attention to the pragmatic elements of space, and that successfully align space with the notions that make sense now, may in turn prove to be the solution to draw the best and the brightest to the space program.

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If only we could answer the “why space?” question. If only we could come up with a catchy phrase to light up people’s eyes and compel the masses. If only we could inspire the young generations just as the Apollo generation was inspired. Then the space program would see a bigger budget and a more vocal and populous following, the aerospace sector would be fed to satiety with a skilled and passionate workforce for decades to come and US leadership in space, even in the context of a growing number of space actors, would be a sure thing. If only.

So the logic goes for those who see the most pressing issues of the US space program as a result of endemic emotional detachment. For these stakeholders, the compelling reasons that drove the country to glory in the most visible “battle” of the Cold War have been either forgotten or ignored. In their wake, the country has implemented space policies that have failed to attach themselves to the minds and hearts of the younger generations, threatening the very survival of the program they were meant to support. To solve this situation, the inspiration argument has been highlighted often in the past couple of years, to the point of predictability. Yet despite its widespread defense, inspiration alone has not reinvigorated support for the space program as proponents argue it would. At the root of the problem is that this logic, constructed out of a memory of the cold war era, is sharply at odds with the interests and sensibilities of the generations it is supposed to reel in. The unpopular but potentially fruitful alternative is to draw attention to the pragmatic aspects of space, and to move away from

concepts that made sense decades ago but which may prove counterproductive in the years to come.

1. Looking back: the Apollo myth

A number of blue-ribbon panels, Congressional committees, and experts have said that the crucial element lacking not only to sustain US efforts in space but to see them take off again, enlarged and reinvigorated, is that of an inspiring vision. The quotation from the Book of Proverbs in the House Science & Technology Committee room – “where there is no vision, the people perish” – as well as the opening words of President Kennedy’s 1961 “Moon speech” are often cited to support this claim. The thrust of it is that the Apollo program was sustained by that vision, a vision that President Kennedy held and propagated, and that was shared by the American people. This vision rests on the demand not only for a long-term strategy of human expansion to the cosmos, but of one led by the USA, dependent “upon the adventurousness of the American people” [1], and so an ideal of American exceptionalism and Manifest Destiny. Simply put: “space is what the Americans do” [2].

While powerful enough, this vision is context-specific and more complex than some proponents seem to think. To begin with, this image of President Kennedy “as a visionary leader committed to expanding the human presence throughout the Solar System” has been repeatedly discredited [3]. As Roger Launius further points out, “there is not a shred of evidence to support this interpretation”. The truth is that President Kennedy was initially unsure about committing to the Space Race; the Apollo decision was all about timing. The impact of the Gagarin flight in 1961 and the embarrassment of the USA in the Bay of Pigs fiasco forced the president to

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look for ways to uphold the US image internationally. Influential documents circulated at the time linked space activities to national prestige,¹ and it was in this context that, after being assured of its technical feasibility, President Kennedy was presented with the option of the Moon landing. In contrast to the image of one committed to a long-term vision in space, we find instead a president who saw in a specific space policy a resource: a way to counter the Soviet threat in a public manner that would assuage both national and international concerns over suspected US disadvantage. It was, as John Logsdon writes, “a politically driven response” and “not motivated by a belief in the long-term importance of space exploration” [4]. President Kennedy could not have put it more clearly than when he told NASA Administrator James Webb, “I don’t care about space” [5]. For him, and for the other key players that drew the plan to its fruition, space was seen as an answer to a series of often disparate concerns that had little to do with an active agenda of inspiration.

While the inspiring vision certainly helped sell the program, it was not enough to sustain it for long. Behind the scenes, the process was more tumultuous than it seems. While the president’s oft-quoted speech successfully won congressional and public support and consolidated what efforts NASA and others had accumulated to make the program a reality, “the Apollo honeymoon ended in 1962” [6]. As the costs of the program escalated (to a total which would be around \$150 billion in current dollars) many began to question the wisdom of the commitment. For the first time there arose the ever recurring question of whether it was right for the nation to commit funds in a space program when there were other “more pressing” needs [7]. In the post-Apollo period there have been no more compelling reasons to justify a comparable commitment of resources. Total government space spending, which in 1964 was 5%, has been less than 2% in the past 20 years.² In retrospect, Apollo was not the beginning of a space program that would from then on indulge in a wealth of resources and seemingly unquestioned commitment. It was instead the outcome of a specific set of circumstances that gave the initial push to a program that would from then on have to fight for its own share of attention and budget.

The above description may seem evident to some, particularly when there is consent among historians that “Apollo was an anomaly” [8], yet it is striking that, in spite of this, policy makers and stakeholders continue to revert to Apollo as the paradigm and model of the American space program. In this sense, while NASA benefited from the Apollo-infused rhetoric that would continue to permeate in other governmental layers, this would also pose an impediment to any effort to outlive this problematic legacy. Part of this stems from a lack of understanding that there was much more at play than an inspiring vision. It was the interplay of elements such as resources, political support, and the alignment of space with several crucial goals that led to its success. The 1969 landing diminished the complexity of the events for many, and in this

reductionist stance it would seem that Apollo – NASA and the space program – began and ended with a powerful speech. Similarly, despite what proponents of the inspiration argument would like to think, the Apollo program was not inspiring because of what it set out to do, but because it succeeded.

2. The limits of emotional attachment

In addition to being solely reductionist, the inspiration argument has another critical flaw: it reveals a static way of thinking about the conditions that nurture a generation, that shape even what it finds compelling and inspiring. It is true that many (not all) who became involved in space do talk about being inspired by some of the things already mentioned – the Moon speech and the Apollo missions. Others speak of the excitement imbued by the science fiction stories they grew up with. And still others responded to a powerful call of to expand to the highest frontier. Because of the interplay of the issues at the time, and the successful alignment of space with these key priorities, space truly was inspiring.

But that was then. In no simpler way do we find evidence of a shift than by realizing that inspiration has now transformed from a consequence to a strategy. If space is what Americans are born to do, then why is it that they must be inspired to do it? The simple fact is that the cold war generation, which grew up with the Soviet fear and witnessed the powerful rebirth of the scientific spirit that led to the Moon landings, is not the generation that policy makers are eager to inspire today. It is not Robert Heinlein’s generation or Robert Clarke’s, but Ray Bradbury’s, Neil Gaiman’s and Michael Crichton’s – and the messages and feelings evoked through their works are shaped by a different context. Consequently, the conceptions and ideals that worked then do not necessarily fit now.

The “narrow nationalistic scope of the frontier analogy”, for example, masks the fact that such a conception can have surprisingly little bearing on the younger public [2]. For a generation that is both witness to and active participant in the advances of globalization, it speaks more of conquest and violence, of a hardship that is not a feature of everyday life. For them (for us), the notions of interdependence, cooperation coexisting with competition, and multiculturalism are more powerful and meaningful. This clash of conceptions, when not understood and addressed, can spell doom for efforts to draw younger members of the public to space because these can have the opposite effect.³ Space can easily be disregarded as foreign and unimportant or, worse, as part of the problem.⁴

Lacking a debate about what science and space mean today to the younger generations also leads to a situation where the inspiration argument bypasses whole groups of people who do not find its tenets compelling, but are instead driven by other concerns, interests, and emotions. Consider for instance the growing interest in climate sciences, renewable energy, and sustainable living. The number of people that feel compelled and drawn by their growing awareness of the frailty of the environment and the interdependence between human actions and quality of life is growing. Some say these feelings were first propagated with the Earthrise picture, of the Earth coming up from the curvature of the lunar surface but, while directly linked to space, it was not discovery, competition, or a drive to be the best, that this evoked. It was something else.

¹ The link between space and national projection of power was initially established with an influential RAND report prior to the launch of the first satellites. In a document written by then NASA Administrator James Webb and Secretary of State, Robert McNamara, they further reiterated this view as they included “national prestige” as one of the benefits of space activity and the one in which the USA was now currently trailing the USSR. See Webb, J.E. and McNamara, R. *Recommendations for Our National Space Program: Changes, Policies, Goals*, (May 8, 1961).

² Extracted from OMB Spreadsheet: Total Government Expenditures 1948–2009 OMB Spreadsheet: Outlays for Discretionary Programs 1964–2015, available at http://www.whitehouse.gov/omb/budget/Historicalsand AIA Aerospace Facts and Figures 2000/2001: Federal Space Activities Outlays, Fiscal Years 1961–1999, available at http://www.aiaaerospace.org/resource_center/economics/aerospace_facts_and_figures/?industry_information/economics/aerospace_facts_and_figures/.

³ For more on this, see [9]. A discussion to this effect, on the limitations of the frontier analogy was held during the 19 November 2010 episode of the Space Show, available here: <http://archive.thespaceshow.com/shows/1462-BWB-2010-11-19.mp3>.

⁴ Williamson suggests that the use of the frontier analogy may be counterproductive in the end. He writes: “Clothing their aspirations in the mythic garments of a romanticized frontier is a way of ignoring or pushing aside the possible negative aspects of the exploitation of space.” [9].

Failure to understand the impact of the changing context can also lead to ignoring changes in attitude about other, related issues. Consider the following. While some may find the inspiration argument serves to explain why people do not move toward space activities, it is insufficient to explain why they move to non-space careers. What is it about finance and banking, for example, that draws people to these fields? It is not, in a word, inspiration. We find instead that in a context of corporatizing academic institutions – where many graduates are not absorbed by the state or academia, but instead go to the private sector – the priorities that drive such decisions can be colored by other, not just emotional, interests. What is it that we are not seeing about the aerospace field that is masked behind the concern over inspiration? Could it be concerns over career security and benefits? People who move to non-aerospace fields may in fact be just as inspired as others, but may respond to other needs and responsibilities, such as the security and reliability offered by a career in finance, despite the lack of emotional attachment. This is a simple example, but it serves to show that considering concrete issues such as these, which may drive people to choose other fields over aerospace, is a missed opportunity.

In this changed, post-cold war context, the inspiration argument has proven insufficient. Why is it that, despite so many inspiring messages, often invoking the words that proved successful in the past, people are not lining up at NASA's doors or begging Congress for budget increases? It seems clear that the inspiration argument, which serves to lift the spirit, rarely translates into increased resources or support. Consider two recent examples. When the Columbia Accident Investigation Board concluded that NASA lacked direction, the Bush Administration responded by crafting the 2004 Vision for Space Exploration (VSE), providing NASA with a set of multi-decadal ambitious exploration goals meant to re-inspire the civil space program. The VSE was touted as “flexible” and “affordable”, but resource allocation for these new challenges depended on retiring the Space Shuttle and de-orbiting the International Space Station (ISS) to liberate funds. Despite the powerful message and the exciting plans, the promised increases to NASA's budget were not delivered. The usual delays and technical challenges of such a large-scale endeavor were thus exacerbated by insufficient funds that forced NASA to draw from the resources of other programs.

These challenges led the Augustine Committee in 2009 to conclude that the Constellation Program, the main component of the VSE, would not meet its requirements on time without a significant boost of resources [10], a point that led the Obama administration to eventually cancel it. During the summer of 2010, when the administration's plans were being hotly debated, inspiration was yet again touted as a key issue. The administration's proposal – which hinged on transforming NASA into a technology-development and research agency and which transferred crew and cargo transport to the ISS, the commercial sector – was criticized for killing the space program, and relinquishing US leadership. It also called for ISS continuation past 2016, which, despite being widely supported, was still found uninspiring for some.

Interestingly enough, the reaction from Congress – although aggressive in changing key policy provisions – did not add one cent to this proposed budget, and instead kept it at \$19 billion.⁵ In the context of economic challenges, members of Congress were hard put to argue for double digit increases for a space program that was

vehemently defended as a way to keep America being the best. At the end of the day, with growing unemployment, a monstrous deficit, two seemingly never-ending wars, and a myriad of issues facing the country, arguments appealing to space for discovery, leadership, and prestige alone just do not cut it.

3. The value of lackluster pragmatism

Space activities have continued to flourish not because of a wider hold of inspirational words, but because of the concrete purposes they serve. It would be no exaggeration to say that US power and projected leadership rest on its adept use of space capabilities and systems. From the 1991 Gulf war, dubbed the first space war because space capabilities led the US military to victory, it is mind-blowing just how much the use of space systems for every stage of military support has evolved. The list grows even more expansive when one considers the advantages secured through satellite platforms in the commercial and civil sectors – from the GPS-enabled devices on most cell phones, the speedy internet connections securing banking transactions and the on-time delivery of graduate student papers, to the amazing discoveries of NASA spacecraft. To ask the value of space seems unnecessary, yet we still do.⁶

Part of the problem is that the uses are not evident to the public – the link between the ATM, the cell phone and the weather forecast on the nightly news are not immediately clear. Good public relations, expanded outreach and education serve to close this gap. At the root of the matter is a need to understand the technology, where it comes from, and what it does; communicating that, while Tang orange drink did not come from the space program, a myriad of technologies did, and that for every dollar invested in the space program, seven are poured back into the economy, for example. The proliferation of these statistics and of the data that pile up every day of how what we do in space translates into crucial aspects of our society is a full-time job. In a NASA press release documenting the publication of Spinoff 2010, Chief Technologist Bobby Braun was quoted as saying that “since 1976, NASA's Spinoff publication has documented more than 1700 compelling examples of NASA research and innovation that benefit the public every day”.

NASA Spinoff is just one of several publications solely devoted to demonstrating the value of space,⁷ populating a continually expanding body of literature meant to demonstrate the simple, yet often ignored fact, that investments in space yield benefits on Earth. Think of advances in terms of safety and rescue and a list of examples quickly comes to mind, such as the NASA-aided rescue of the Chilean miners in October 2010, the more than 18 000 lives saved with the SARSAT search and rescue system, and the satellite images that assisted disaster management in post-earthquake Haiti. The problem is that, while these are easy enough to name for a graduate student in the field, many other people are completely oblivious of them and of the countless other examples of the impact of space in their lives.

The problem, then, is that these are almost always referred to as the frosting on the cake, not the cake itself. They are used to answer, half-heartedly, the question of what we gain from space, not why we do it. There is strong hesitancy to make the case for space in this way, emphasizing the practical benefits gained, when the familiar

⁶ On 21 October 2009 the Senate Commerce, Science and Transportation Committee's Subcommittee on Science and Space held a hearing titled “The Case for Space: Examining the Value of Space Exploration”.

⁷ The list of publications and websites is long but two examples are: “The Space Place,” which can be accessed here <http://www.thespaceplace.com/nasa/spinoffs.html>; and the “NASA in your Life” website <http://www.nasa.gov/topics/nasalife/index.html>.

⁵ The 2010 NASA Authorization Act (P.L. 111–267) authorized \$19 billion for FY2011. NASA was appropriated \$18.485 billion (\$516 million less) for the remainder of FY2011 in the continuing resolution that was signed into law on 15 April (P.L. 112–10).

arguments of American identity and the classic tenets of inspiration are so enticingly attractive. Despite the challenges of the inspiration argument, linking space to practical uses is seen as lackluster in comparison and seemingly unworthy of the foremost space power of the world. Inspiration's value is not only its familiarity but also a matter of pride. At the opening ceremony of the AIAA Space 2010 Conference in Anaheim, CA, Bran Ferren, Co-Chairman and Chief Executive Officer of Applied Minds, said that inspiring children was one of the primary goals of the space program. He spoke against the utilitarian point of view, at odds with a visionary space program. In his speech, as in those of many others, the argument of inspiration – as both the problem and the solution – was used to criticize recent space policies, and even to justify concerns over a languishing and aging aerospace workforce.

The unspoken desire is to speak of space as something the USA chooses to do because it can, not because it needs to. But is that true anymore? Not really. Concerns over the increasing vulnerability of US space systems are tied to the fact of its increasing dependence on these assets. The good news – at least for those who advocate interdependence to advance space security – is that other countries are also beginning to depend on space. For developing and developed countries alike, space is no longer just an option. But even that is not clearly understood by the public. Many still see the budget of the space program as an expensive luxury. And fashioning the case for space as something that only really speaks to US identity and leadership does not help. A lucky few, when asked about the importance of space activities, may be able to mention a couple of spinoffs by chance but, for most, its important role in society remains a complete mystery.

Because of this, it is precisely this angle – the utilitarian vision which asks “how activities in space can best serve the demands of Earth-bound society by delivering a variety of direct and tangible benefits” [11] – that I believe should be strengthened from now on. We should harvest the very real impact of space capabilities, not just as spinoffs or as something *else* the space program produces, but as the core reason why it must be supported and grown. For attracting the younger generations that are no longer driven by concerns over demonstrated US leadership, or an identity defined through ideological competition, the key may be putting the pragmatic aspect of space on an equal footing to the popular – yet sorely limiting – inspiration argument.

In fashioning this message, the USA can look at the examples provided by other countries, in particular the emerging space actors, who make the case for space in highly relatable terms. Latin American countries in particular have learned that making the case for space in easily identifiable, practical terms is necessary to sustain the space effort. The proposed Peruvian national space policy, for example, talks about the impediment of having policy makers perceive money spent on science and technology not as an investment, but as waste [12]. In Peru as in most countries in the region, the key is to tie space to the development project – not talking about it in esoteric terms but in a practical, relatable sense. During an interview, Colombian Ambassador Ciro Arévalo Yepes talked about space seeming inaccessible to the people, something “semi-esoteric”. He also discussed the problem, akin to what can be seen in the United States, that space capabilities are “taken for granted”. Unless the investment in space is seen as directly linked to the needs of the public and their country, it finds no support. This element of the space endeavor is deeply rooted in the advancing space activities of the region, where space is viewed as a tool to “solve priority problems in benefit of the societies of the countries of the continent” [13].

This approach should not only be a feature of the developing countries' take on space, but should be part of a strategy to make the case for space in established space powers as well.

Our advantage? Space already is an important tool to address those concrete issues – the very same that often trump space funding in the priority list. Crafting a message that takes strength from this kind of lackluster pragmatism may prove to be the key alternative to attract a new community of space cadets, stakeholders, and supporters from the ranks of those who do not need to be inspired to do so.

4. Breaking out of the box

Recently the call for an inspiring space program – as the Augustine Committee phrased it, “worthy of a great nation” – has intensified. Proponents have recalled the reconstructed memory of the Apollo vision to fix key issues of the US space program – including reduced budgets and a languishing workforce. Policies and speeches that have poorly articulated the vision of the courageous, competitive, daring, entrepreneurial and restless American spirit have been invoked as the culprit. Proponents of the inspiration argument thus remain lamenting: if only.

Yet, as I have discussed above, the classic inspirational approach is outdated, limiting and potentially counterproductive. Proponents see in it not only the necessary rhetoric of a good speech, but the right content of an argument for space that deflates what is both practical and seemingly boring. What is striking is that, despite being loudly espoused, it has not translated into sustained and growing political and public support. And with vociferous calls for inspiration growing, important questions that could yield concrete results remain hidden.

The space program can continue to be strengthened by those aspects that prove to be inspirational and emotionally compelling to people, but that should not be its purpose or the focus of the strategy. Inspiration is a consequence, not a cause. Furthermore, there is a real distance between what the idea of NASA inspires in people and what NASA needs to do every day to function, and the latter should not be sacrificed by pressures to comply with extraordinary, but inspiring deadlines. There are practical and scientific reasons to pursue specific missions, opt for particular destinations and make budget decisions, and these are not all accommodated by romantic notions of human expansion to the cosmos. If policy makers were to support policies that are instead practical in their technical, schedule and resource feasibility, this would allow the civil space program to outgrow its state of “suspended adolescence” [14].

Our efforts should be directed to draw the best and the brightest, regardless of whether they are compelled by the right reasons to pursue space. The reasons that drove so many to space then may no longer be compelling or as important. How do we reach those, particularly in the younger generations, who see space differently? How do we distinguish between the kind of intellectual, personal interests that can be spurred on by space activities, but that are, nevertheless, not configured as inspiration? The “why space?” question must be asked by stepping out of the box of the nicely ringing sound of inspiration. Our strategies to attract the younger generations should be backed by a real understanding of the context that continually shapes them, aligning space with the notions that make sense now, as it was successfully aligned back at the beginning of the Space Age.

Despite what some may say, a lack of inspiration is not killing the space program at all, and neither will continuing to emphasize this limited logic cause its demise. The benefits that ensured NASA and its programs would continue in the post-Apollo period have only grown. Even if they seem so evident that they need not be identified, ending up in a secondary level, the practical benefits of the space program are what enabled its continued existence, what made Apollo not just the victory of a landing, but of a whole endeavor. Because of this, failing to rethink our strategy to solve

these key issues in the US space program will not risk its continued existence: space is that important. At issue is not its survival, but its shape, scope and funding level; going beyond the inspiration argument may be the defining factor between the space program we get to have and the one we truly want.

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