"Defending Hierarchy from the Moon to the Indian Ocean:

Symbolic Capital and Political Dominance in Early Modern China and the Cold War"

Online Appendix

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Introduction

In the course of preparing this article, we researched numerous alternative explanations and tracked down detail to a more granular level than space constraints allow us to demonstrate in the main text. Consequently, we have relegated many of these details to this Appendix, much as quantitative scholars often put descriptive data, coding decisions, and robustness checks in appendices and supplemental information.

We first provide additional information about our Case Methodology, including more detail on our secondary (and primary) source research. We also present two additional sets of alternative explanations and our reasoning for viewing them as weak. Finally, we present additional evidence justifying our claims in the main text on certain points regarding our cases.

Case Methodology

Data Sources

We draw on a wide variety of data sources. For the Ming, we rely principally on English-language secondary sources that document the nature of Ming politics, technology, and the history of the voyages themselves. Of course, we would prefer to study the records of the court directly. However, that is impossible in this case. Not only have few records of Ming voyages survived, but most scholars accept that later generations of scholar-officials who opposed the missions destroyed the relevant archives.[1] Still, we stress that the remaining evidence has proven sufficient to allow scholars of Chinese history and technology to agree on many key points about the voyages. Further, given our process-tracing methodology, we can, in some sense, use "absence of evidence" as evidence if we have a good understanding about *why* that evidence is missing.

By contrast, the challenge in studying the Apollo missions and related subjects lies in sifting through the incredible amount of available evidence. We drew on primary sources contained in the JFK Presidential Library in Boston (and the JFK Library's Web site); the documents in the *Foreign Relations of the United States*; contemporaneous news media reports; public-opinion surveys; and copious secondary histories of the "space race" from American, Soviet, Western, Eastern Bloc, and non-aligned perspectives. Accordingly, we can test our preferred explanation against rivals using data that ranges from mass opinion surveys to tape-recorded presidential conversations.

Incidentally, since we wrote the first draft of this paper, the Kennedy budget meeting regarding NASA has gotten a full multimedia treatment at the Miller Center (UVa) Web site: https://millercenter.org/the-presidency/educational-resources/fly-me-to-the-moon.

"Folk Bayes" and Qualitative Inference Strategy

A recent movement in process-tracing involves recasting the logic of process-tracing (and the allied practice of practice-tracing, per Pouliot 2014[2]) in terms of Bayesian inference (Bennett and Checkel 2014;[3] Rohlfing 2014;[4] Zaks Forthcoming;[5] Humphreys and Jacobs 2015; [6] Fairfield and Charman 2017[7]). We attempted to follow the best practices in this work as closely as we can. However, we did not go as far as, for instance, Humphreys and Jacobs to specify priors or posteriors based on the informative value of each observation (or "clue", in the jargon) in numerical terms. Instead, we have specified these factors qualitatively—an approach we term "Folk Bayes". Our wager is simply that

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[1] Needham, Joseph. 1971. *Science and Civilization in China: Volume 4: Physics and Physical Technology, Part III: Civil Engineering and Nautics.* Cambridge University Press. p, 525 and Finlay, Robert. 1991. "The Treasure-Ships of Zheng He: Chinese Maritime Imperialism in the Age of Discovery." *Terrae Incognitae* 23(1). p. 12.

[2] Pouliot, V. 2014. Practice tracing (pp. 237-259). In A. Bennett, & J. T. Checkel (Eds.). *Process Tracing: From Metaphor to Analytic Tool.* Cambridge: Cambridge University Press.

[3] Bennett, Andrew and Jeffrey T Checkel. 2014. Process Tracing: From Philosophical Roots To Best Practices. In *Process Tracing: From Metaphor to Analytic Tool.* Cambridge, UK: Cambridge University Press.

[4] Rohlfing, Ingo. 2014. Comparative Hypothesis Testing Via Process Tracing. *Sociological Methods & Research*, *43*(4), 606-642.

[5] Zaks, Sherry. Forthcoming. Relationships Among Rivals: A Framework for Analyzing Contending Hypotheses in Process-Tracing Research. *Political Analysis.*

[6] Humphreys, Macartan, and Alan M Jacobs. 2015. Mixing Methods: A Bayesian Approach. *American Political Science Review* 109 (04): 653-673.

[7] Fairfield, Tasha, and Andres Charman. 2017. Explicit Bayesian Analysis for Process Tracing: Guidelines, Opportunities, and Caveats. *Political Analysis* in press.

the pattern of evidence, not just some of the more memorable individual clues, is so strong that we can rule out the most commonplace objections or alternative theories across what seems like a wide variety of reasonable assumptions of how likely observing each clue would be given some sets of parameters.

We have done this for two reasons. First, any such number is inherently arbitrary and might lead to the perception that we were trying to mislead readers about the actual degree of confidence we place in our estimates. Instead, we are merely trying to systematize a longstanding process of figuring out what *does* and *does not* fit the patterns of evidence predicted by different explanations. This process is subjective (which is fine in Bayes-land, of course) but also somewhat crude. Second, the exact way of translating our crude intuitions into priors and posteriors is not yet established, and we didn't have the wherewithal to refine this methodological point. Nor, to be frank, did we feel it necessary, given that the patterns of evidence predicted by the strongest alternative explanations so clearly pointed in directions other than what we found.

The advantage of this "folk Bayes" approach is that it still requires us to provide readers with a precise argument about what evidence we think counts—and for how much. This disciplines both our interpretation of the evidence and also renders transparent how we have approached the cases, providing future researchers with a way of checking new (or unknown) evidence against our standards. It also allows us to distinguish between evidence that might be fatal to one theory but nonsupportive to another or even supportive to two theories but not a third. Although we do not refer to each of the tests (Implications) by their van Evera type (hoop cases and smoking guns and so on), a careful reader should be able to classify them according to the difference in probative value across different theories.

Additional Alternative Explanations

In the main body of the text, we focused on security and economic explanations. However, we also consider other alternatives in this appendix.

1. National Identity. Some scholars suggest that some innate sense of national identity or purpose might have sufficed to mobilize these ventures (see for instance Buzan 2010[8]). Such explanations would track with some variants of constructivist theory that focus on the causal force of collective identity (see Banchoff 1999; Hopf 2002)[9] or perhaps arguments about rhetorical entrapment and discursive power (Jackson 2006; Bially Mattern 2004).[10] The form of the Ming treasure fleet resembled ordinary "tributary system" maintenance; perhaps the fleet simply sought to expand that system in accordance with "Chinese identities.". Similarly, the rhetoric President Kennedy employed in a September 1962 speech drew on American tropes and is often casually invoked along these lines: "We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard."[11] If such invocations of national identities mattered, then the external contest might have been superfluous.

2. Rent-seeking/bureaucratic politics. Some scholars argue that the Apollo and the Ming expeditions may have arisen not because of any *generally* economically efficient argument but because they delivered specific benefits to NASA contractors or to Ming court factions.

Adding more alternative explanations requires additional tests, which we provide below.

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[8] Buzan, Barry. 2010. America In Space: the International Relations of Star Trek and Battlestar Galactica. *Millennium-Journal of International Studies*.

[9] Banchoff, Thomas 1999. German Identity and European Integration. *European Journal of International Relations* **5**(3): 259-289.; Hopf, Ted 2002. *Social Construction of International Politics: Identities and Foreign Policies, Moscow 1955 and 1999*. Ithaca, NY, Cornell University Press.

[10] Jackson, Patrick Thaddeus 2006. *Civilizing the Enemy: German Reconstruction and the Invention of the West.* Ann Arbor, MI, University of Michigan Press; Bially Mattern, Janice. 2004. *Ordering International Politics; Identity, Crisis and Representational Force*. New York, Routledge.

[11] John F. Kennedy: "Address at Rice University in Houston on the Nation's Space Effort," September 12, 1962. Online by Gerhard Peters and John T. Woolley, *The American Presidency Project*. http://www.presidency.ucsb.edu/ws/?pid=8862.

Expectations for Additional Alternative Theories

Table A1. Alternative Explanations

Implications	Conditions under which rival theories would predict observation			Evidentiary Value if Observed	Evidentiary Value if *Not* Observed
	Our theory	**National Identity**	**Rent-seeking**		
1. *Subject is a politically superordinate actor?*	Required	Possibly relevant	Irrelevant	Very low for our mechanism; weakly for national identity; irrelevant to rent-seeking	Dispositive against our mechanism; weak against national identity; irrelevant to rent-seeking
2. *Subject faces demonstrable crisis of legitimacy (e.g., fears that subordinates/potential subordinates will reject its right to exercise leadership)?*	Required	Possibly relevant	Irrelevant	Very low for our mechanism; weakly for national identity; irrelevant to rent-seeking	Dispositive against our mechanism; weak against national identity; irrelevant to rent-seeking
3. *Subject responds by seeking to accrue symbolic capital by diverting assets from other military or economic uses?*	Required	Likely	Unlikely	Moderately in favor of our mechanism; moderately in favor of national identity; against rent-seeking	Dispositive against our theory; moderately damaging to national identity; neither favorable nor unfavorable to rent-seeking
4. *Project ends when legitimacy crisis has ceased?*	Likely but not required	Unlikely (should be reproduced as national identity persists)	Unlikely	Moderately in favor; damaging against identity; moderately in favor of rent-seeking	Damaging to our theory; weakly in favor of national identity and rent-seeking
5. *Leaders expect that direct benefits (military or economic) separate from symbolic capital justify expenditures*	Extremely unlikely	Unlikely	Required	Highly damaging against our mechanism and national identity; strongly in favor of rent-seeking	Highly damaging *against* rent-seeking, moderately favorable *for* our theory and national identity
6. *Societal actors besides leaders (e.g. interest groups, bureaucracy) take the lead in urging specific project*	Extremely unlikely	Possible	Almost essential	Highly damaging against our mechanism; weakly in favor with national identity; strongly favoring rent-seeking	Weakly in favor of our theory; weakly against national identity; highly damaging to rent-seeking
7. *Evidence suggests that other logics (e.g. identity-based or normative) would have compelled action in absence of crisis*	Required *not* to be the case	Likely	Likely	Highly damaging against our mechanism; favorable to national identity and rent-seeking	Damaging against rival theories and strongly favorable to our theory

Testing Additional Alternative Theories: Ming

Ideological or Identity-Based Explanation: The Ming Case

Perhaps the tributary system sprung from deep-seated imperial Chinese worldviews. For instance, Wang interprets the expeditions (and other adventurous policies pursued by the Yongle emperor in Mongolia and Vietnam) as a natural result of Ming hegemony in seeking to extend the Sinocentric order to new lands.[12] As we argue above, we think this explanation is not entirely wrong. The Yongle and Xuande emperors did draw on a set of practices related to the "tributary system" in justifying and using the fleets. And both the routine "nearby" tributary system and the voyages of the treasure fleets shared the same superficial goals of having the local potentates declare themselves imperial subordinates.

Yet viewing the treasure fleets' expansion as resulting from the Ming's role as "system manager" of an international order does not fit with important pieces of evidence.[13] "Natural" extensions of the tributary system would most likely have appeared as evolutionary incremental policies that enjoyed as broad support as the "normal" tributary relationships did. The clue with the greatest probative value comes, again, from the scale and ambition of the missions. The fleets were *uniquely* large and costly endeavors opposed by the bureaucracy precisely on those grounds, in contrast to scholar-officials' strong support of the tributary system. Moreover, the voyages began during a period of imperial tumult and ended when the crisis had been resolved.

Explanations that view the treasure fleets as "natural" elaborations of the tributary system therefore face too many obstacles in explaining why the voyages began when they did, why they stopped so quickly, or why the bureaucracy was so opposed to them. Prestige-centric accounts offer explanations for each point.

To "score" this explanation, we focus most strongly on Implications 4 and 6 and the fact that Confucian court officials strongly and consistently opposed the innovations, even though the court pursued it. A "national identity" (or, better, ideological) explanation should have held that court officials would have pursued this most strongly, which is the opposite of what we observe.

Court Politics/Rent-Seeking

A rent-seeking explanation would seek to demonstrate that the material incentives that accrued to those who backed the expeditions was sufficient to explain the voyages. As far as we can tell, there were indeed myriad opportunities for enrichment by court officials who backed the voyages—given the scale of the treasure fleets, how could it have been any different? Tellingly, scholar-officials consistently opposed these voyages—but not other tributary missions—as "examples of imperial waste and extravagance.[14] The Confucian elite viewed the voyages as scandalously wasteful: "The Grand Fleet … swallowed up funds which, in the view of all right-thinking bureaucrats, would be much better spent on water-conservancy projects for the farmers, or in agrarian financing, 'ever-normal granaries', and the like."[15] These lend credence to the idea that rent distribution was at the

[12] Wang, Yuan-Kang. 2012. "Managing Regional Hegemony in Historical Asia: The Case of Early Ming China." *The Chinese Journal of International Politics*. 5(2): 129-153. See at p. 143.
[13] Wang 2012, 152.
[14] Dreyer, Edward L. 2007. *Zheng He: China and the Oceans in the Early Ming Dynasty, 1405-1433*. Pearson Longman. p. 165
[15] Needham 1971, 524.

core of the fight—and that those who oversaw the project, largely court eunuchs, were engaged in the practice for self-interested reasons.

Eunuchs' centrality to the enterprise came from their structural position. Emperors saw eunuchs as more trustworthy than officials, both because they lacked heirs—meaning they could not enhance their family's status—at the extreme, by founding a new dynasty—and because, unlike the highly regarded scholar-officials, they were outcasts wholly reliant upon imperial favor. Such factors made them controllable.[16] The Yongle emperor entrusted the command of almost all voyages to the eunuch admiral Zheng He. (The second mission was probably given to another eunuch, and eunuchs also filled most subordinate command roles.)[17]

However, blaming eunuchs for the voyages (as scholar-officials often did, later) overlooks the most important point: why would eunuchs view the voyages as a means of rent-seeking in the first place? Our argument seems more straightforward: eunuchs' connection to the fleets resulted from the fundamental purpose of the voyages: bolstering the imperial throne against the rhetorical efforts at delegitimation pursued by Confucian scholar-officials. The eunuchs' association with the project probably added to scholar-officials' disdain for it, but was secondary to their opposition: they would have had good reason to oppose or resent anything undertaken by the Yongle emperor, *especially* if it enhanced his legitimacy.

Here, the key evidence is not the stopping of the voyages (Implication 6), since rivalries at court might have generated stopping even if the squabble were just about rents. Instead, we view the balance of Yongle's policy as reflecting more strongly the evidence that we see. As Humphreys and Jacobs point out, even in the absence of a "smoking gun" (which we would love to have), a consistent finding of evidence consistent with one mechanism can sufficiently shift our judgment away from rivals.[18]

[16] Tsai, Shih-shan (Henry). 1996. *The Eunuchs in the Ming Dynasty*. SUNY Press. p. 97.
[17] Needham, pp. 489-90.
[18] See for instance Humphreys and Jacobs 2015 at 663 and in Section B of their appendix.

Testing Additional Alternative Theories: Apollo

Bureaucratic Politics/Rent-Seeking

Perhaps the origins of the Kennedy lunar missions lie in the vast amounts of rents—in the form of lucrative contracts and political patronage—the Apollo project created. A combination of agency budget-seeking, contractor lobbying, and legislative self-interest might have resulted in an iron triangle to boost the project. Certainly, that was among the theses advanced in the 1960s, including by political scientist Amitai Etzioni in the 1964 book *The Moon-Doggle*. Etzioni argued that the space race resulted from the Air Force's desire for budgetary priority and a fear that ICBMs would put it out of work.[19] More measured contemporaneous observers, such as Vernon Van Dyke, suggested instead that the geographic concentration of suppliers and interest groups (e.g. around Houston, Texas) explained the persistence of the Apollo project.[20]

We find little evidence in support of a patronage- or rent-seeking theory, and more against it. However successful typical public-choice and bureaucratic-politics rationales may prove when it comes to explaining aspects of the Apollo project's siting and contracting decisions, however, rent-seeking and bureaucratic politics are no more successful at explaining the impetus for Apollo than their analogues did in explaining the treasure-fleet decision. To put it another way: there was plenty of rent-seeking and patronage associated with Apollo, but those were no more causal than the thunder caused the lightning.

For instance, legislators' reactions to Kennedy's May 1961 speech focused on their concerns over the cost of the project (as, of course, did Kennedy's own worries)—hardly the behavior of rent-seekers.[21] And when Kennedy instructed Webb to ensure that Apollo was NASA's top priority, rebalancing away from a broad-based scientific portfolio, Webb's objections gave away the weakness of contractor-centric theories:

> WEBB: All right, then, let me say this: If I go out and say that this [Apollo] is the number-one priority and that everything else must give way to it, I'm going to lose an important element of support for your program and for your administration.
>
> KENNEDY [interrupting]: By who? Who? What people? Who?
>
> WEBB: By a large number of people.
>
> KENNEDY: Who? Who?
>
> WEBB: Well, particularly the brainy people in industry and in the universities who are looking at a solid base.

Without being overly cynical, if the only constituency Webb (who didn't know he was being recorded) was willing to bring up was "the brainy people", the influence of interest groups seems weak indeed.

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[19] Etzioni, Amitai. 1964. *The Moon-Doggle*. Doubleday & Company. Pp. vii-viii. He puts the argument more precisely in Etzioni, Amitai, 1966. "Comment on Frye's Review of The Moon-Doggle" *Journal of Conflict Resolution* 10 (1): 113-116.
[20] Van Dyke, Vernon. 1964. *Pride and Power: The Rationale of the Space Program*. University of Illinois Press. P. 168.
[21] E.g. Shuster, Alvin. "Congress Wary on Cost, But Likes Kennedy Goals." *The New York Times* 26 May 1961. ProQuest Historical Library.

Congress, the bureaucracy, and industry were quite willing to extract rents when Kennedy determined to (as he said once in another context) "pay any price" to beat the Soviets to the moon. But that does not address the questions we are interested in.

National Identity

One final explanation for the Apollo missions holds that Kennedy's leadership inspired Americans—as then-Senator Barack Obama put it after winning the 2008 New Hampshire primary, that Kennedy was "the president who chose the moon as our new frontier".[22] We mention this explanation only to dismiss it. Kennedy was a space skeptic, not an enthusiast, and regretted being forced into an expensive space race.[23] We similarly reject other popular explanations evoking elective affinities between a supposed American "frontier spirit" and the exploration of space. Such mythic invocations are particularly popular among contemporary boosters of manned space exploration (and even colonization).[24]

But, the Apollo project never enjoyed the kind of overwhelming popular support this hypotheses posits. A 1965 poll (from late in the period, but consistent with other polls) shows that the Apollo project was a literal Condorcet *loser* compared to *all* other alternative uses of the money (see Table A2).

Evidence from Kennedy's decision-making significantly undermines them. Although the two explanations share some potentially overlapping confirmatory evidence (Implications 1, 2, 3, and 5), they differ so substantially on Implications 4, 6, and 7 that we score this for our theory.

[22] "Barack Obama's New Hampshire Primary Speech," 8 January 2008, *The New York Times*, http://www.nytimes.com/2008/01/08/us/politics/08text-obama.html?pagewanted=all&_r=0.

[23] Garber, Stephen J. 1999. "Multiple Means to an End: A Reexamination of President Kennedy's Decision to Go to the Moon." *Quest: The History of Spaceflight Quarterly*. 7: 5-17.

[24] Launius, Roger. 2005. "Perceptions of Apollo: Myth, Nostalgia, Memory, Or All Of The Above?" *Space Policy* 21(2): 129-139.

Table A2. Harris Poll (1965) about Americans' views of lunar project importance (released November 1, 1965; via iPoll). "More than space" is the percentage of respondents saying they would favor the bolded policy objective more than the space program (including Apollo). Note that space loses every *pairwise comparison—a Condorcet loser.*

QuestionID	Question	More Than Space	Less Than Space
USHARRIS.110165.R3A	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **keeping the defense of the country strong?**	58	42
USHARRIS.110165.R3B	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **federal aid to education?**	57	43
USHARRIS.110165.R3C	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **desalinization of water?**	57	43
USHARRIS.110165.R3D	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on**... slum clearance?**	56	44
USHARRIS.110165.R3E	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **reducing the national debt?**	54	46
USHARRIS.110165.R3F	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **Medicare for aged?**	54	46
USHARRIS.110165.R3G	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **anti-poverty program?**	53	47
USHARRIS.110165.R3H	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **cutting government spending?**	53	47
USHARRIS.110165.R3I	If you had to choose, do you think it more important or less important to spend 4 billion a year on the space program than to spend it on... **another tax cut?**	51	49

Ming / Treasure Fleet Case Extensions

Justifying the case as "international"

One objection to the inclusion of this case is that, since the legitimating crisis took place *within* a polity, it is not properly a crisis of an "international" order. We have two responses. The first is to note that by any definition the nature of the Ming treasure fleets' missions involved international relations. Even if the crisis of dynastic legitimation was "domestic", the field on which the crisis played out was international. Our second is to reject the notion that the legitimation crisis was "domestic". Like many polities, the strategies of Ming rule combined elements of "domestic" statecraft with those of "international" statecraft. Indeed, demarcating where "domestic" rule left off and "international" rule began is difficult. For instance, the relations between the imperial court and the nearer tributary states, like Korea, blurred the two roles substantially.[25]

If we avoid applying anachronistic and Eurocentric notions of "sovereignty" and instead view relations between the court and local elites as a transperipheral network linking regions that differed in religion, culture, language, and interests, then it becomes immediately apparent that a crisis in this network's core inextricably combined "domestic" and "international" elements. Whether the crisis essentially involved an "international" dimension or "only" involved the launching of massive expeditions to cajole or coerce dozens of rulers to swear fealty to the Chinese emperor, however, it seems clear that the case tracks well with the theory developed in this article.

Identifying a crisis of legitimacy

Identifying a crisis of legitimacy within a hierarchical order proves simple: the Yongle emperor had, literally, broken with the fundamental legitimating discourses of the dynasty by overthrowing and (likely) murdering his nephew. The Ming Dynasty was still new and uncertain when its dynastic founder, Zhu Yuanzhang, the Hongwu emperor, died in 1398. His death left his 14-year-old grandson, Zhu Yunwen, to rule as the Jianwen emperor. Influenced by his Confucian scholar-bureaucratic advisers, the Jianwen emperor began executing potential rivals—including his uncles, imperial princes enfeoffed with substantial domains by the Hongwu emperor. In response, Zhu Di, the Prince of Yan, rebelled. After defeating the Jianwen emperor in the Jingnan Campaign, he took the throne as the Yongle emperor.[26]

We should not underestimate how profound this shock was. Ditmanson describes "the usurpation of 1402" as "a dramatic event that significantly redefined the political landscape of the early Ming dynasty":

> The civil war leading up to the usurpation left the empire in ruins and the palace and capital at Nanjing in ashes. Moreover, many in the top echelons of the scholarly and political elite lost their lives. The dead included such prominent figures as Fang Xiaoru (1357-1402), overseer of the metropolitan civil service examinations in

[25] See Lee, Ji-Young. 2016. *China's Hegemony: Four Hundred Years of East Asian Domination*. New York, Columbia University Press.

[26] Cham, Hok-Lam. 1988. The Chien-wen, Yung-lo, Hung-hsi, and Hsuan-te reigns, 1399-1435. Cambridge History of China Volume 7: The Ming Dynasty, 1368-1644, Part I. F. W. Mote and D. Twitchett. Cambridge, UK, Cambridge University Press: 182-304. At pp. 184-201.

> Nanjing in 1393 and 1396; Lian Zining (d. 1402), *secundus* in the palace examinations of 1385; Huang Zicheng (1364-1402), *tertius* in the same examinations; Huang Guan (1364-1402), *primus* in the 1391 examinations; and Wang Gen (d. 1402), *secundus* in the 1400 exams. In the years after the usurpation, these events were broached in public discourse only in such terse euphemistic terms as "Quelling Disturbances" or "The Extirpation". The Jianwen reign was immediately obliterated from historical records and the Hongwu reign was revised to incorporate the Jianwen years….At Yongle's behest, an official account of the usurpation, the *Record of Quelling Disturbances in Obedience to Heaven*…was compiled sometime between 1404 and 1418; it vindicated the new emperor and castigated the Jianwen court as having been dominated by licentious imperial behavior and 'treacherous and evil' ministers.[27]

Cham[28] discusses not only the historiographical efforts at restoring the legitimacy of the Yongle line but also the purges:

> This [the usurpation] is an extraordinary case not only in view of the excessive violence marking the struggle for imperial succession, which brought about the demise of the [Jianwen] emperor and th violent death of tens of thousands of his supporters, but also in light of the strenuous efforts at legitimation by the successful usurper through an elaborate and systematic scheme of historical revisions. After his seizure of power, Yongle ordered a wanton destruction of the archives of the Jianwen reign and commanded the court historians to transmute the records of the dynastic founding so that new versions of history were manufactured to conceal his usurping designs against the reigning emperor and to legitimize his own accession. These historical revisions not only thoroughly eradiated the evidence contradicting Yongle's claim to legitimacy but also practically destroyed all the records of the Jianwen Emperor pertinent to an appraisal of his place in history.[29]

Moroever,

> The most violent action taken by the new emperor was the wanton execution of the former officials of Jianwen who had refused to give their allegiance, including Huang Zicheng, Qi Tai, Fang Xiaoru and several hundred others. The purge was necessary not only because he needed to eliminate opposition to his new authority but also to justify his earlier claims that the mission of his campaign was to punish the 'nefarious ministers' who had misguided the emperor. In due course the purge was extended to involve tens of thousands of innocent people, who were executed, incarcertated, or banished; the new emperor proved himself as ruthless as the founder in conducting wide-ranging, bloody purges.[30]

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[27] Ditmanson, Peter. 2007. Venerating the Martyrs of the 1402 Usurpation: History and Memory in the Mid and Late Ming Dynasty. *T'oung Pao* 93: 110-158, pp. 110-1.

[28] Cham's career spanned two different Romanization eras; we use "Cham" because it was the one we encountered first and the one he is listed under in the Cambridge History of China series but by the 21st century he used "Hok-lam Chan" (note the final *n*).

[29] Cham, Hok-lam. 2007. Legitimating Usurpation: Historical Revisions under the Ming Yongle Emperor (r. 1402-1424). In *The Legitimation of New Orders: Case Studies in World History*. Ed. Philip Yuen-sang Leung. Chinese University Press. P. 78.

[30] Cham p. 94.

Explaining the Seventh Voyage

Our explanation for the treasure fleet voyages gives primacy to how the Yongle emperor's crisis of legitimacy created the conditions in which a dramatic performance of practices associated with legitimate imperial rule would make sense. However, keen readers will note that the *seventh* voyage took place under a different emperor, the Xuande emperor, who faced no such legitimacy crisis. How do we explain this?

We think that the seventh voyage complicates our explanation, but not fatally so. First, by resurrecting the practices associated with the Yongle emperor, the Xuande emperor could demonstrate his disfavor toward the scholar-official class and establish an independent base (a shift from his father, the Hongxi emperor, who was practically a literatus himself). The Xuande emperor shared his grandfather Yongle's skepticism of the Confucian literati.

Second, the Xuande emperor also faced a threat to his rule in 1425 when his uncle, the Prince of Han, attempted a coup against him (Cham 1998, 285). It is plausible, then, that similar motivations lay behind the Xuande emperor's resumption of the treasure fleets as had motivated Yongle, but his sudden death in 1435 left makes further inference about his agenda difficult. See Cham 1988, 303-205.

Third, even if our theory only incompletely accounts for the motivations for the seventh voyage, we do not see this as discrediting our explanation for Yongle's decision to implement the practice in the first place. It is possible that if the Xuande emperor had lived long – he died comparatively early – that the treasure fleet practice would have become traditionalized and taken on different meanings and their brief interruption under the Hongxi emperor would have become the exception. But even in this counterfactual world we would still be able to explain the reasoning behind Yongle's creation of the practice through the mechanisms and meanings we describe here.

Finally, the court-politics argument does not wholly account how the voyages ended. Yongle's immediate successor, Hongxi, canceled further voyages, but he died after less than a year on the throne and his successor, the Xuande emperor, commissioned the seventh—and, it proved, final—expedition, which sailed in 1433. Tellingly, the Hongxi emperor is remembered as a supporter of the scholar-officials, while the Xuande emperor favored a more active, energetic imperial office at the officials' expense. Only with the Xuande emperor's death did it become clear that the anti-fleet faction had prevailed.[31]

[31] Needham 1971, 525.

Kennedy and Apollo Case Extensions

The Existence of Science and Technology as a Field Before Sputnik

The importance of the more general field of science and technology to US-Soviet competition had deeper roots than the specific domain of space. For the United States, scientific and technological leadership was taken for granted. As Van Dyke (1946, p. 14) writes, before Sputnik "national prestige was not at stake" in Americans' view of satellite technology, and "no one thought of mentioning national pride, i.e., the importance to national self-esteem that the country should be first in space." He further argues that "America's prestige, her leadership in the world, her place second to none may have been unconsciously assumed as a part of the natural order of things rather than consciously regarded as prized distinctions to be striven for and earned." (p. 15). But the *Sputnik* launch shattered that illusion, causing a crisis that suggests by its vehemence how fundamental the American assumption of superiority—not just in space technology, a realm that hardly anyone had heard of until then, but in technology itself—had become to American postwar identity.

We discuss the crisis itself further below. Here, we seek to establish that the science and technology field preexisted the emergence of the "space race", making the field intelligible to actors and also ripe for inclusion in the multispectrum confrontation of the Cold War. In doing so, we also help to justify our contention that a) the science and technology field was a latent field of competition and b) that the challenge posed by Soviet space firsts contributed to a crisis of American legitimacy.

Soviet Science and Technology as Legitimating Projects at Home and Abroad

The Soviet Union long emphasized science-and-technology achievements as evidence of the superiority of Marxist-Leninism. The "Soviet science system"—both as a philosophy of science and as an organized set of social practices—drew especial political relevance from the regime's grounding in dialectical materialism. The "materialism" was not incidental: "In the Soviet ideological frame, nature existed for the sake of exploitation by humans to build a better society".[32] This essential mixing of science and politics could lead to absurdities, like the rejection of Mendelian genetics in favor of Lysenkoism, but it also made demonstrations of Soviet scientific progress and technological mastery central to the regime.[33] During the 1950s, in an era of de-Stalinization, Maurer et al (p. 5) argue that the marriage of material progress and dialectical materialism appeared emancipatory to average Soviet citizens and to Khrushchev-era official thinking.[34]

In this context, *Sputnik* was ready to be appropriated as the vindication of Soviet leadership and a confirmation of Soviet propaganda that the regime really was at the vanguard of history. As Berkner (1958, 227) wrote,

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[32] Gordin, Michael D. 2014. The Soviet Science System. *The Point*. https://thepointmag.com/2014/politics/soviet-science-system. Last accessed 9 March 2017. Originally published summer 2014.

[33] See for instance Ings, Simon. 2017. *Stalin and the Scientists: A History of Triumph and Tragedy, 1905-1953*, Atlantic Monthly Press; Spufford, Francis. 2012. *Red Plenty*. Graywolf Press.

[34] Maurer, Eva, Julia Richers, Monica Ruthers, and Carmen Scheide. 2011. Introduction: What does 'space culture' mean in Soviet society? In *Soviet Space Culture: Cosmic Enthusiasm in Socialist Societies*. Eds. Maurer, Eva, Julia Richers, Monica Ruthers, and Carmen Scheide. Pp. 1-9. Palgrave Macmillan.

> Leaders of the Soviet bloc are now [post-*Sputnik*] capitalizing on intellectual leadership as a means of acquiring an essential element of what Milovan Djilas calls 'the inherent need of those in power to be recognizable prototypes of brilliance and might.' Their ready political and propagandistic exploitation of the great achievement of Soviet scientists upon launching the first earth satellite illustrates clearly their recognition of the advantages that scientific leadership can confer.

Westad (2007, p. 71) describes how Khrushchev's confidence in Soviet space technology was joined to his earlier enthusiasm for the "Virgin Lands" campaign, which attempted to cultivate "32 million acres of previously uncultivated land in Kazakhstan and southwestern Siberia". This 1954 campaign was meant to demonstrate Soviet *agricultural* prowess, a key demonstration of the socialist route to self-sufficiency. But in its scope—its bigness, its bravura, its pride of place in Soviet propaganda at home and abroad—it served to reinforce the materialist/scientific field as a way of legitimating Communism and the regime.[35]

American Science and Technology as Legitimating Projects at Home and Abroad

The use of technology as a way of justifying regimes was not unknown in the United States, either. During the 19th century, demonstrations of U.S. scientific and technological "know-how" proved essential advertising for "Yankee ingenuity." The combination of demonstration and marketing that made the "American system" a synonym for manufacturing based on interchangeable parts (even though such systems had British or French origins) contributed to the late-nineteenth century atmosphere of American thought that proposed (as Meier 1958, p. 116 writes) "that the 'American Way' could best be explained and even disseminated abroad by the vehicle of American technology."[36] Spectacular feats of engineering prowess—the Brooklyn Bridge, the Atlantic telegraph cable, world's fairs, the Panama Canal—proved an interesting (and underrated by international-relations scholars) form of foreign engagement and demonstration of U.S. legitimacy during a period when Washington absented itself from great-power politics. Ades (2005) further argues that American mastery of science and technology not only served to contrast peaceful but progressive American ingenuity with European bellicosity but also to justify American dominance over "backward", nonwhite peoples.[37] By the end of the Second World War, the Manhattan Project seemed to convincingly evidence American technological prowess.[38]

It's important to stress that such attitudes seem to have been commonly held not among elites but also at the popular level. Scott and Jurek (2014, pp. 1-16) detail how 1950s popular science fiction narratives (such as the children's shows *Tom Corbett*, *Tomorrowland*, and *Captain Video*) mixed with nonfictional—but speculative accounts—from sources such as Willy Ley (a consultant for *Tom Corbett*) and Wernher von Braun about the conquest of space. But such texts clearly envisioned *Americans* as settling the final frontier. Fenlon (2012) surveys art in major magazines like *Collier's* from *well* before *Sputnik* and demonstrates that way that imaginaries featured the United States

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[35] Westad, Odd Arne. 2007. *The Global Cold War*. Cambridge University Press.

[36] Meier, Hugo A. 1958. American Technology and the Nineteenth-Century World. *American Quarterly*. pp. 116-130.

[37] Ades, Michael. 2005. *Dominance by Design: Technological Imperatives and America's Civilizing Mission*. Belknap Press of Harvard University Press.

[38] For an excellent account of the development of 'Big Science' as a field of competition, see Gilady, Lilach. 2016. Conspicuous Waste in International Relations. Ph.D. Diss., Yale University, pp. 235-289.

taking part in "the conquest of space"; his conclusion that such repetitions reinforced U.S. notions of superiority seems reasonable.[39]

How *Sputnik* Created Space Races as a Cold War Field of Competition

A key claim for us is that Gagarin's flight provoked a crisis of legitimacy within a field of competition. We focus on the 1961 events in the main paper, but we seek here to demonstrate how Gagarin's orbit fit within a preexisting field of competition that was already tied to Cold War dynamics.

Narrative evidence proves suggestive about the effect that *Sputnik* had on Americans. Marlin (1987) records in a survey of U.S. media coverage of the satellite. that a recurrent theme in coverage was the question of whether the Soviets had "stolen" space technology from the Americans (p. 547). Such a charge—redolent of not only the Hindenbergs but also the "who lost China" debates of the late 1940s—suggests the plausibility of the argument that American science and technology could not be defeated—but only betrayed. A related but more polite statement of this view came in a 1958 *Foreign Affairs* piece by Berkner, who argued that

> The vital point is not so much that the Soviet satellite preceded that of the United States, heretofore credited as the leader of world technology; it is that the United States, for the first time, finds a challenging competitor in the most advanced scientific fields. The achievement of the Soviet satellite has demonstrated to Americans what they refused to believe before, that they are in a race for intellectual leadership when they hadn't realized that there was a race.[40]

Moreover, American pride combined with American prejudice to make the highly visible Soviet string of space "firsts" to be especially wounding to U.S. ideas about the international science and technology pecking order. As Dickson writes,

> Americans had underestimated Russia [before *Sputnik*], confusing shoddy Russian cars and other consumer goods with the state of Soviet science and technology. Prior to Sputnik, when there was much talk of small transportable "suitcase bombs", a common joke was that the Russians could not surreptitiously introduce nuclear explosives into the United States because they had not yet been able to perfect the suitcase.[41]

Or, as Republican Senator Alexander Wiley put it in a 1962 speech on the floor of the Senate,

> Since Sputnik I, the world has transformed its image of Russia. No longer is this the land of peasants, slovenly, awkward, inarticulate and illiterate—the peasants that one finds so skillfully described in the writings of Turgenev. Rather, Russia, in the mind of the world today, is a land of proven technological and scientific successes, a Russia that in the technical sense that the 19th century Russian westernizer hoped would take place. As a consequence of the changed image of the Soviet Union, Russian prestige in world affairs has increased

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[39] Fenlon, Wesley. 2012. How Sci-Fi Propaganda Art Influenced the US and Soviet Space Race. Tested.com: http://www.tested.com/art/43726-sci_fi-art-propaganda-across-cultures/. Originally published: 3 April 2012. Last accessed: 9 March 2017.

[40] Berkner, Lloyd V. 1958. "Earth Satellites and Foreign Policy." *Foreign Affairs*. January, p. 223. On Berkner, science, national security, and the Cold War, see Needell, Allan A. (2013). *Science, Cold War and the American State*. Routledge.

[41] Dickson, Paul. 2001. *Sputnik: The Shock Of The Century*. Walker Publishing Company, p. 109.

> enormously. And our prestige as the great technological and scientific wonder of the world has, I regret to say, declined."[42]

We also possess quantitative evidence to buttress our claims. It turns out that we have fairly conclusive estimation about the effect of Sputnik on how Americans outside of elite foreign policy circles viewed their nation's place in the world. Fortuitously, a survey on scientific matters conducted by the University of Michigan's Institute for Social Research included both pre- and post-Sputnik waves, enabling crude measurements of the shifts in public opinion due to the satellite's launch.[43] The share of Americans who reported having heard of satellites doubled to 91 percent compared to pre-Sputnik levels. Before Sputnik, a plurality of Americans (20 percent) believed that the purpose of satellites was to furnish scientific information; only 1 percent believed their principal role was "competition with [the] Russians." After Sputnik, 27 percent named "scientific information" as satellites' role, a slight increase, but 20 percent gave "competition with Russians" as the purpose of satellites—a shift and a proportion that remained constant among most educational and income groups.

Evidence from U.S. public opinion data also confirms that actions could mitigate these crises. Immediately after Sputnik, 1 in 4 Americans believed that "Russian science [was] greatly superior" to American science; only about 1 in 5 Americans believed that American science was greatly superior to Russian. A year later, following the launch of U.S. satellites, only 8 percent of Americans thought Russian science was greatly superior, but 26 percent thought Soviet science was "about the same" and another 33 percent regarded it as "better in some areas, not in others". Only 21 percent viewed American science as "greatly superior."[44] The fallout had political consequence as well: during the six weeks after Sputnik, President Eisenhower's approval rating plunged by 22 percentage points.[45]

In regards to international opinion, a USIA survey in 1959 summarized international reaction as having been, if anything, *more* deleterious to US prestige abroad than at home:

> Prior to the launching of Sputnik I, there was a very general belief that the Soviet Union was a long way from offering a serious challenge to the U.S. lead in science, technology, and productive power. Sputnik and subsequent Soviet space achievements appeared as a dramatic demonstration that the USSR was able to challenge the US successfully in an endeavor where US pre-eminence had been widely taken for granted….US post-sputnik space activities have served to restore confidence in general US scientific and technological leadership. … But they have not succeeded in restoring the pre-sputnik gap…or in erasing the new image of the USSR and Soviet society.[46]

Public opinion surveys documented the crisis Sputnik sparked among even close U.S. allies. Almond wrote of a survey of Western European public opinion that "Almost every respondent in the countries surveyed was aware of [it]…The only other event in recent history which can match

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[42] *Congressional Record*, September 10, 1962, p. 18932.
[43] Survey Research Center. 1959. Satellites, Science, and the Public: A Report of a National Survey on the Public Impact of Early Satellite Launchings. University of Michigan, via HathiTrust http://hdl.handle.net/2027/mdp.39015024641683.
[44] Satellites, Science, and the Public, pp. 1-2.
[45] Brzezinski, Matthew. 2007. *Red Moon Rising: Sputnik and the Hidden Rivalries That Ignited the Space Age*. Times Books: Henry Holt and Company. p. 222.
[46] U.S. Information Agency, Office of Research and Analysis, "Impact of U.S. and Soviet Space Programs on World Opinion," 7 July 1959, U.S. President's Committee on Information Activities Abroad (Sprague Committee) Records, 1959-1961, Box 6, A83-10, Dwight D. Eisenhower Library, Abilene, Kansas.

Sputnik in general public awareness was the explosion of the atom bomb in 1945." Opinion surveys in 1957 suggested that the Sputnik launch dealt a major blow to U.S. prestige. Majorities or pluralities in Britain (58 percent), France (49 percent), and Italy (37 percent) responding that in scientific development Russia now led the United States .[47] After the first U.S. artificial satellite was launched, the United States regained only *parity*, not *supremacy*:

> one may infer that one of the most stable beliefs of the postwar era, the belief in the scientific and technological superiority of the United States, has been rudely shaken, and its place has been taken by anxious estimating which fluctuates with each report of a significant step forward in satellite launchings. …one of the most significant components in the popular support of the American position in international politics—widespread popular conviction regarding American scientific and technical superiority—has been lost for the indefinite future and that all the expectations and attitudes which were based on this conviction have also been shaken for the indefinite future.[48]

Dudziak provides an unusual measure of the importance of *Sputnik* in her history of the Cold War and civil rights.[49] At the end of a chapter describing how the 1957 Little Rock school integration crisis greatly harmed American standing abroad with its allies and the decolonizing world, she mentions that the launch of *Sputnik* ended foreign discussion of the matter—but only because the damage to U.S. reputation from the Soviet triumph was even greater than that from the civil rights crisis.[50]

A 1960 Central Intelligence Agency report to Dulles emphasized that while the United States enjoyed superior "purely scientific returns" (5) from its space program than the Soviet Union did from its own, the USSR was reaping political advantages and that (6) "it would be dangerous for the U.S. to dismiss as trivial those aspects of space activity which possess such popular appeal". Moveover, as CIA itself concluded (30):[51]

> The fact can hardly be challenged that the USSR has been able to exploit its space program for its political ends far more effectively than has the U.S. Surveys show a profound change in world opinion concerning the previously assumed technological and industrial supremacy of the United States. Moreover, it seems to be in the realm of fact to assert that world opinion has tended to equate space supremacy to military supremacy.

In this same report, we see, even before Gagarin's flight, the emphasis on the importance of acquiring "firsts" in space—an emphasis that would lead Kennedy to see critical symbolic capital in the form of 'winning' a major 'first' via the Apollo Project (31):

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[47] Almond, Gabriel. 1960. Public Opinion and the Development of Space Technology. *The Public Opinion Quarterly*. 24(4): 555, 557

[48] Almond 1960, 558.

[49] Dudziak, Mary. 2002. *Cold War Civil Rights: Race and the Image of American Democracy*. Princeton, NJ: Princeton University Press. p. 145.

[50] Dudziak, *Cold War Civil Rights*, p. 145.

[51] https://www.cia.gov/library/readingroom/document/cia-rdp80b01676r004000110002-6

a) People, being emotional creatures, will continue to be impressed and swayed by space missions which possess (in addition to their more scientific attributes) a certain novelty, of an adventurous or spectacular nature. In addition, people will certainly continue in their appraisal of a nation's stature in the light of the character of that nation's space exploits. Because of the very real political and economic implications of this appraisal, it is impossible to dismiss as trivial or unimportant the attempt to intrude into a space program a leavening of popularly appealing "firsts."

All of this points to a fundamental feature of early-Cold War competition: the stakes were not simply power-political advantage, but the vindication of ideological superiority. Participants understood this in terms of which system was more progressive, modern, and future-oriented. Indeed, the Sprague Committee report (cited in the text) is explicit on this point[52]:

The 1950s have seen profound changes in the world, including the consolidation of Communist control over the mainland of China, the birth of the hydrogen bomb, and the launching of Sputnik. The 1960s will see even more; this period may prove to be one of the most convulsive and revolutionary decades in several centuries.

Scientific progress has set some of the underlying forces in motion, such as the world-wide population explosion which has resulted from medical and other technological advances. Precisely where new breakthroughs will occur is unforeseeable, but that they will occur, and at an increasing rate, is certain. Some ninety per cent of all the scientists who have ever lived are alive today and the resources which will be devoted to research in the next ten years will equal the total for all past years since the beginning of history.

If progress is driving one wheel of the world transformation now underway, the consequences of backwardness are driving the other. Half of the people on earth still live under conditions of hunger, disease and ignorance; but they have become conscious of the possibility of improvement and are now in active, often violent, struggle to improve their condition. In this vast awakening are infinite possibilities for constructive change and equally great potentialities of danger.

Even if world cooperation could be counted upon and world peace assured, modernizing the societies in which the impoverished portion of this world lives would be a complex and difficult task requiring vigorous and sustained effort. But peace is uncertain and over-all cooperation under present circumstances is out of the question. The Soviet Union, having acquired great industrial and military strength, is pressing hard its drive for expansion and ultimate world domination. In doing so it is exerting all its power to counter our endeavors to help build a free and a more stable world.

Moreover, policymakers did not just worry about new nations and underdeveloped areas, but also about maintaining Western Europe[53]:

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[52] Conclusions and Recommendations of the President's Committee on Information Activities Abroad ("Sprague Committee"), December 1960, CIA-RDP86B00269R001000010003-7 (Declassified 2008/04/22), p. 1

[53] Sprague Committee , p. 63

WESTERN EUROPE

1. The strong desire within Western Europe for relaxation of cold war tensions has been manifested in considerable neutralist feeling and some support for the idea that Europe should be a "third force" between the U. S. and the USSR. Our main informational problem in Western Europe will be to maintain European firmness against Soviet threats and blandishments, in an environment of increasing apathy, cold war weariness, and preoccupation with material well being.

Recommendation:

Our information efforts should be directed toward reinforcing the image of Western Europe as a part of a closely knit Atlantic Community and undercutting the idea of Europe as a possibly neutral center of world power.

Additional Evidence Against Military Explanation

A strong piece of evidence against a security-based argument for the moon shot comes from the way the Apollo project was attacked by critics and defended by the administration. Critics of Apollo argued that the diversion of resources to the Moon shot gravely *weakened* U.S. military potential in space. An August 1963 article in *Reader's Digest* exemplifies this critique:

> What is sending shivers up the spines of top-flight military advisers is the assumption (shared, due to the flamboyant publicity, by millions of U.S. citizens) that the nation which achieves the first moon-landing will automatically be top dog. This is wildly dangerous thinking … because it ignores the warning that our military have tried to drive home to civilian planners from the very first conception of a moon shot: *i.e., in lavishing our money and scientific brain-power on the effort to beat the Russians to the moon, we run the grave risk of losing the free world's battle for survival.*[54]

The article argued that lunar exploration was diverting resources from near-Earth orbit, a far more critical area for war-fighting and intelligence: "It is futile to assume that the imagination-capturing moon program will aid us herein. Knowledge of tremendous value is being gained, but national defense against a hostile, menacing Soviet Union has more urgent and exacting requirements than the peaceful exploration of space."

Given that *Reader's Digest* commanded among the largest circulations of any magazine in the United States, Kennedy commissioned an official response. Tellingly, Deputy Secretary of Defense Roswell Gilpatric's memorandum countering the *Digest*'s claims harshly disputed almost every point in the article *except* for its characterization of the lunar project as having no strategic military value.[55] Gilpatric instead pointed to the large U.S. budget for the *separate* military space program. His strongest defense of NASA programs was that "manned space flight activities which NASA is undertaking to accomplish the lunar mission will contribute to military manned space capabilities if and when it appears important to DoD requirements"—a purely hypothetical scenario. Near-

[54] Drake, Frances Vivian. 1963. We're Running the Wrong Race with Russia. *Readers Digest* August. pp. 49-55.
[55] Gilpatric, Rosewell, to President Kennedy. "Reader's Digest Article on Space." 31 July 1963. JFK Presidential Library. https://www.jfklibrary.org/Asset-Viewer/Archives/JFKPOF-078-002.aspx

contemporaneous reviews of the Apollo project reached similar conclusions of the military *in*utility of manned space exploration.[56]

Why No Moonshots During Later Crises?

One objection to our explanation might suggest that our theory predicts that we should have observed many more "moonshots" than actually occurred since the United States continued to face challenges after the Apollo era. Our answer rests on three separate but related points: first, not every crisis can be met with a leveraging of other assets; second, U.S. administrations—and other governments—*do* engage in such attempts, just not as dramatically as Apollo; and, finally, the contextual nature of practices associated with shifting fields means that we should no more expect subsequent performative responses to take the form of "moonshots" than the People's Republic should respond to contemporary challenges by launching new fleets of wooden ships crewed by eunuchs. We present the third argument, which we think is sufficient, in the manuscript itself. We elaborate here on the other two points.

The Limits of Capital Substitution

Not every crisis of political leadership can be met with a leveraging of other assets. In some cases, the failure of the dominant actor to respond may rest on idiosyncratic factors. The causal link between challenge and response may be moderated or mediated in complex organizations. However, even in these cases, the fact that actors bear costs (as Eisenhower did) from failing to respond as they "should" points to the existence of a field and hierarchical contest. In other cases, the "exchange rate" between different fields of competition may rule out a response. If no readily accepted logic allows for the translation of gains in one field to super- or sub-ordination in another, then a dominant actor may find that it is not possible to leverage its assets. In that case, the dominant actor may simply have to accept being dethroned. Something like this seems to have occurred during the Suez Crisis.

Dominant Actors Do Invest In Status

We contend that we *do* observe dominant actors investing in status goods consonant with their roles all the time. In the rather decentralized political and economic system of the United States, some of these actions are harder to trace than others. For instance, the fact that the United States Olympic Committee and not a Ministry of Sport coordinates American efforts at the Olympics does not mean that failure to lead (or at least come close) in the medal count wouldn't prompt domestic debate. Similarly, a multi-hundred million dollar Hollywood-produced movie like *Transformers* that represents the centrality of the US military and visually reaffirms the importance of the United States is not an official act of propaganda akin to treasure fleets, but its effect is similar in serving the functional role of expressing and reaffirming dominance.[57] Certainly, audiences abroad and at home view such performances as relating to America's dominant role—and controversies over increasingly pro-Chinese content in Hollywood blockbusters, including *Transformers 4,* suggest that American critics had long taken such a role for granted.[58] More directly, for decades, American officials and military personnel performed exercises and other partly-symbolic, partly-functional actions with NATO and other allies to literally demonstrate the military potential of the United States and its

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[56] For instance, Van Dyke, *Pride and Power*, and Etzioni, *Moon-Doggle*.

[57] See also the Sprague Committee on American books, sporting competitions, television, and films as elements of U.S. power; Sprague Committee pp. 51-9.

[58] For instance, Rosen, Stanley. 2015. "Hollywood in China: Selling Out or Cashing In?" *The Diplomat*. http://thediplomat.com/2015/05/hollywood-in-china-selling-out-or-cashing-in/ Last accessed 13 March 2017.

commitment to an alliance. The great advantage of the treasure fleets and Apollo is that they make these mechanisms as clear as possible as they are sometimes obscured by other factors. Moreover, the scale of these commitments demonstrate that the incentives to perform social dominance can command the marshalling of "material" resources at a level often assumed to only be demanded by economic crisis or war.