

# Investigating the Congressional Organizational Agents of Spaceflight During the Apollo Era

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## Abstract

Using Policy Agendas Project coding data and Congressional hearing data, I am modeling the organizations that arise at Congressional NASA and spaceflight hearings during the Apollo Era, 1957-1969. The purpose of the project is to find out what agents have influenced Congress during the period that would end up sending man to the Moon. History suggests this was a very nationally defensive period in spaceflight and it will be important to chart whom Congress has spoken to on spaceflight as a policy issue and where Congress gets its information used when making decisions.

*Keywords:* National Aeronautics and Space Administration, spaceflight, Congress, Congressional information theory, Congressional hearings, Congressional witness organizations, national defense, Congressional decision making

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## 1. Introduction

On July 16, 1969, five minutes until liftoff of the Apollo 11 spacecraft, the vehicle went through its usual status checks. The astronauts were busy conducting reports, awaiting confirmation systems were all clear and go for launch. Three minutes later, Apollo 11 would lift off and make it to the Moon and back.

We remember the launch and we remember Neil Armstrongs historic one small step for a man, one giant leap for mankind words, but how did we get

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there? How did the US decide to get to the Moon let alone return? What happened during the Apollo Era that would warrant such a decision?

In the 1940s, the US was involved in ballistic missile and atmospheric science, largely with the Huntsville military ballistics program lead by the Army. The US had been interested in science and technology policy largely during this period. The US worked as a technocracy, that is, using government lead technological enterprise as a means to secure the state. The only other country involved in technocratic enterprises during this period was the Soviet Union.

In 1957, the Soviet Union launched an unmanned probe into space, Sputnik, thus effectively creating the worlds first satellite into orbit. The US saw this as a threat to state security and immediately called to order a Congressional hearing to discuss Soviet involvement in space and the USs role in missile and satellite technology. As Logsdon (1970) tells, proponents of entering the space race saw the US falling into a second-class nation without demonstrating rocketry technology. Rocket technology would effectively show the US had achieved long-range missile capability.

The US had already had plans to launch a satellite into orbit as part of the International Geophysical Year of 1957 under Eisenhower and it called this program Project Vanguard. The US team under Eisenhower viewed this project as a scientific endeavor and did not place this project on top priority until Soviets launched Sputnik. After Sputnik, satellites became a national security issue.

After Congressional hearings with leaders from the Department of Defense, the Navy and the Army, the National Aeronautics and Space Administration was formed with the goal of creating an agency that would handle our space crisis. Eisenhowers first job for NASA was to transport Department of Defense functions to NASA as well as in 1959 transfer the Army ballistics in Huntsville to NASA. NASA would become the agency that handled rocketry sciences lead by Werner Von Braun and no longer in Army hands. The Air Force had also long been interested in human spaceflight specifically for warfare purposes. [1]

The US was at a race with the Soviet Union for technocratic achievement and after Yuri Gagarin became the first man in space in 1961, the US viewed

itself as behind the Soviets technocratically. Many technocratic rationales for beating the Soviets were argued during this period: National prestige, national security, science, and technology.

Logsdon (1970) credits the Apollo Mission to President Kennedy, not Eisenhower as Eisenhower wasn't motivated under the rationales of national prestige, national defense, or science and technology as means to explore space; he saw space as a scientific and futuristic prospect. [1] Eisenhower did not believe NASA should be motivated by militaristic rationales, like national defense, which was a crucial decision for his making NASA a civilian, not defense Agency. [1] Kennedy was motivated by these rationales and the decision to go to the Moon is largely credited to him.

The US saw the Apollo mission of landing men on the Moon and returning them safely to Earth as the goal of the Space Race under the guise of boots on the ground in space. The US eventually put man first on the Moon beating the Soviets, however after the Space Race was effectively run, NASA's Apollo missions ended.

### *1.1. Human spaceflight and Eisenhower's Future War*

Logsdon (1970) shares that human spaceflight to Eisenhower was seen as a "futurist theater of war" in space and served as a potential to warfare rather than an immediate danger. [1] Human spaceflight was seen as a low priority and future tier of spaceflight in the Sputnik era of early satellite technology. Wang (2008) credits the President's Scientific Advisory Council (PSAC) as technological experts as well as skeptics. [2] PSAC has listed rationales: 1) man's need to explore space; 2) national defense; 3) national prestige; and 4) science as reasons to explore space. [1]

Still, PSAC had a human spaceflight agenda on their report, albeit a far shooting one, that included moon bases as an eventuality. [1] Eisenhower and his advisers viewed human spaceflight as an ending goal, yet satellites as a top priority. As Logsdon (1970) tells, Eisenhower viewed satellites under the rationale of science not defense, and did not approve of space as a defense

endeavor; it was Kennedy and Johnson that saw the potential of warfare in space at the human level and reach the decision to go to the Moon. [1] The Apollo Era was a defense endeavor and men on the Moon was seen as an epic military enterprise, effectively "boots on the ground" type military achievement. This was a futuristic age of scientific pursuits and technocratic progress. The agents will show if there was indeed defense agents occupying allocation of agents during this period and seeing how unique the Apollo Era really was.

## 2. Theory

### 2.1. Purpose and Hypothesis

The purpose of the study will be to approach witnesses and their respective organizations as agents in a model of spaceflight history. The approach will involve coding witnesses and their respective organization with a type that will be used to find out what type of agent is feeding Congress information regarding NASA and spaceflight. The purpose will be to find out how many of a given type of organization interacts with Congress in the form of a witness, seeking only witnesses that are listed for each type of hearing under ProQuest Congressional documentation.

The hypothesis the history above suggests that if one were to make a guess of a hypothetical model where agents would exist during this period, it would suggest the early satellite era (1957-1959) would see larger Department of Defense and science agents and a latter period of human spaceflight would predict a higher number of Air Force representatives given, as Logsdon (1970) accounts, the Air Force was seen as the first agent to offer human spaceflight as a strategy, not Department of Defense or NASA. [1]

Overall, the agents in the model would include: NASA, JPL, Military, Governmental Agency, Agency Defense (DOD), Commercial, University, Advocacy, Laboratory, Consultant, Representative, and Author. The Jet Propulsion Laboratory will be listed as separate from NASA because JPL is managed by Caltech,

a university and private entity. The defense agents will be from the Military and Government Agency Defense subcategories.

## *2.2. Agents in Literature*

In a theoretical framework, one can model agents as any body that influences that makes decisions and actions. In this study, our agents are what bodies interact with Congress by way of giving testimony to Congress. Congress then collects information and uses it to make decisions. The information given has an effect and to what degree it is difficult to say. For now, we may plot the use of agents to Congress and find out what type of agent subcategory gives Congress information.

Hearsey (2011) writes of the hectic agents surrounding NASA's creation by stating that various Representatives were divided over what to do and interest groups of every form had their say in the process. [3] This begins the question of what information was Congressional Representatives getting from these various interest groups and what types of interest groups were involved.

Agent modeling is defined on Wikipedia as, "one of a class of computational models for simulating the actions and interactions of autonomous agents (both individual or collective entities such as organizations or groups) with a view to assessing their effects on the system as a whole," (2016). Agents are used in various ways to simulate natural and hypothetical phenomena such as computers, aircrafts, cars, and chemistry as well as on the stock market, financial trading, and economic exchanges. [4]

Some other work has been done in this area of scholarship. For example, Narayanan and Nadkarni (2002) found using causal mapping that there were major differences in how certain groups interacted with other groups in relation to the Space Station program and decision making. [5] This was an effort of agent modeling used to see what decisions agents had on the Space Station program.

As far as Congressional decision making and agents is concerned, Burstein and Hirsh used witness testimony from Congress to outline what level of affect

interest organizations are having on US Representatives, finding from a sample of 1,000 testimonies that supports address problem and opponents reframe the debate. [6]

Another example, Miller (2004) used witness data to find federal, state, and local agents change information on policy alternatives and implicated agents: interest groups, community organizations, and citizens. [7] Nowlin (2015) used quantitative data analysis to model issue definition by witness agents and plotted the issue definition of climate change as a policy issue. [8]

In this paper, agent data will be analyzed to illustrate what agents are influencing Congressional decision making through witness testimony. The agent organizational types will be an important factor deciding interests of organizations which can be used in future research of this nature.

### **3. Data and Methods**

#### *3.1. Data*

First, the data will be on the Apollo Era of spaceflight recorded as the year before the Post-Apollo 1970 period, effectively 1957 (the date of the first Congressional hearing) to 1969. The data was taken from Policy Agendas Project (April 2016) now Comparative Agendas Project; the data used was coded under NASA and spaceflight Congressional hearings spreadsheet with Congressional hearings and description listed. [9] Only hearings coded as both NASA and non appropriations were used. [9] The CIS numbers listed for each Congressional hearing was then matched up with data taken from ProQuest Congressional and the two data sets were checked against each other for accuracy. Any discrepancies in the data was corrected. Witness and organization data was taken from ProQuest Congressional. Each organization name listed per witness was coded with one of the study's mechanism subcategories. The subcategories would then be totaled up per given year and analyzed. Table 1 shows the number of hearings and witnesses per given year. Note, not every hearing has witnesses listed.

### *3.2. Methods*

The agents will be tallied and a percentage of what type of agent will be taken. A bar graph will be made showing the different agents that occur per given year, and the distribution of what type of agent subcategory will be shown. The next analysis involves plotting the percentage across the Apollo Era noticing the changes in organizational subcategory over time. The purpose will be to illustrate in these ways how many agents and how witnesses are allocated per a given year and what the pattern is over the course of the Apollo Era. The methods will involved a stacked bar plot and time series. The data will continue from year 1957 and continue to trace where the defense agents are positioned and effectively see if there are any changes of note in the data after the year 1969, the year of the first moon landing before the 1970s period.

## **4. Results**

Table 1 shows the number of hearings and witnesses for the given years data set. There was a total of 151 hearings and 1,210 witnesses for the years 1957-1969. As seen from Graph 1 and Table 2, the military as well as defense agency (Department of Defense) were a large proportion of NASA hearings from the year 1957 and faced a decline after years 1961. These years were critical in setting up NASA's human spaceflight program and the national defense agents played a big part during this period. There were also large proportions of commercial agents during this period, largely the contractors who built the transportation vehicles and crew modules.

As shown on Graph 2, the proportion of NASA witnesses increased after NASA's creation in 1958 and steadily grew until 1964 where it faced a small decline in proportion; NASA witnesses were from a greater diversity of NASA centers and starting in 1961, most representatives from NASA were from NASA Headquarters or Manned Spacecraft Center in Houston, Texas. James Webb from NASA Headquarters and Dr. Von Braun from Marshall gave testimony at

a few of these hearings. Other NASA centers of note were Langley, Lewis, and Ames.

After 1961, national defense agents are less prominent and NASA witnesses became a larger proportion of the total witnesses per year until year 1966 when governmental agencies became a greater proportion of witnesses per year. Many agencies such as GAO, Department of Transportation, and the Executive Office of the President were in the category. This may be indicated on Table 2 and Graph 1 and 2.

Table 1: Number of Hearings and Witnesses Per Year

	Hearings	Witnesses
1957	1	57
1958	10	134
1959	13	94
1960	11	140
1961	15	125
1962	15	152
1963	13	111
1964	8	47
1965	7	55
1966	8	57
1967	243	76
1968	12	74
1969	14	93
Total	151	1,210

Table 2:

	NASA	JPL	Military	Agency	Agency (Def)	Commercial	University	Advocacy	Lab	Expert	Representative	Author
1957	0	0	.52	0	0.1	.96	.36	.058	.019	.019	0	0
1958	0	.015	.28	.25	.11	.23	.067	.06	.082	.02	0	0
1959	.35	.01	.20	.03	.1	.20	.053	0	.02	0	0	.01
1960	.53	0.021	.24	.036	.057	.029	.014	.029	.007	.007	.026	0
1961	.63	0	.08	.08	.056	.13	0	.016	0	0	.008	0
1962	.49	0	0.09	.046	.046	.20	.066	0	.039	.013	.0066	0
1963	.67	0	.045	.045	.054	.09	.081	.018	0	0	0	0
1964	.91	0	0	0.02	0	.064	0	0	0	0	0	0
1965	.56	0	.072	.14	.036	.072	.054	.018	0	0	.036	0
1966	.52	0	.053	.11	.18	0.14	0	0	0	0	0	0
1967	.66	0	.026	.17	.026	.039	0	.026	0	0	.053	0
1968	.64	0	0	.11	.041	.041	.081	.027	0	0	.068	0
1969	.53	0	0	.13	0	.076	.16	.054	0.011	0	.043	0

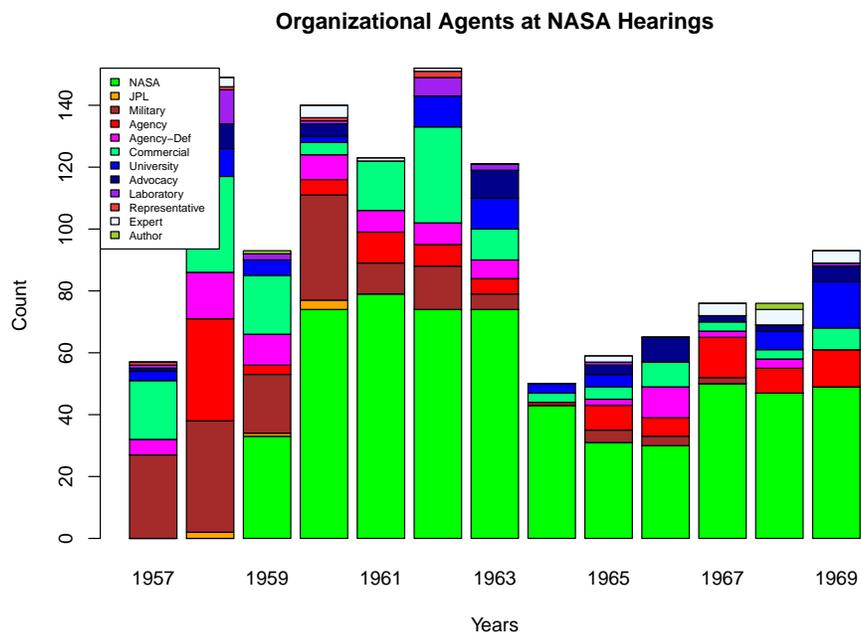


Figure 1: Results of Congressional Attention and Spending Change Regression Analysis

## 5. Conclusion

### 5.1. National defense agents and the Pre-Apollo Era

Overall, the witnesses appearing on behalf of NASA during the years 1957-1969 were more diverse than expected. Along with NASA's various centers and the Jet Propulsion Lab, there were agents such as military (primary Air Force given Air Force's historical interest in human spaceflight), government agencies, defense agencies such as the Department of Defense, commercial entities, universities, advocacy groups, laboratories and observatories, experts, Representatives from Congress, and one Author.

Up until 1961, from 1957, the year of Sputnik, Congressional committees have heard testimony largely from the Air Force and military agencies as well as from the Department of Defense. This period is effectually the Pre-Apollo period given Apollo started in 1961; this Pre-Apollo period was dominated by

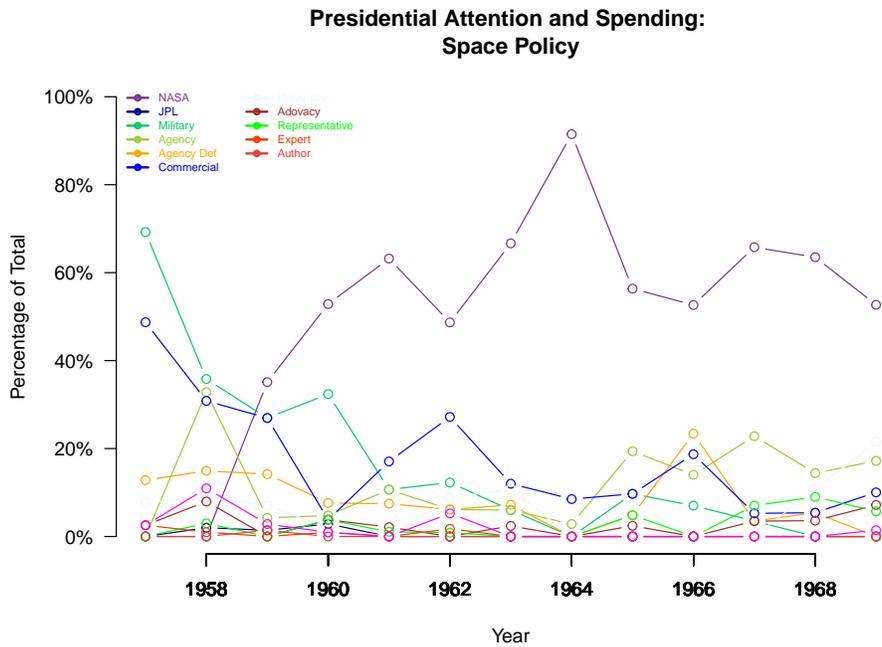


Figure 2: Results of Congressional Attention and Spending Change Regression Analysis

influence from national defense agents such as the Air Force and Department of Defense.

### 5.2. Rise of the Government Agencies Agents

Year 1961 saw a decline of influence from national defense agents and a rise of governmental agency agents beginning in year 1966. There was also a large increase in university agents in 1969. The data shows a mixed palette with the pre-Apollo Mercury and Gemini years in which national defense agents (military and defense agency subcategories) were far more salient than other agents. After this decline, other agents such as governmental agencies and universities arise in proportion especially after 1965.

In summation, this data shows what agents gave information to Congress in the form of Congressional witness testimony on the topic of NASA. It can be seen that during the pre-Apollo era, national defense agents were of dominant

### Pie Chart of Agent Categories

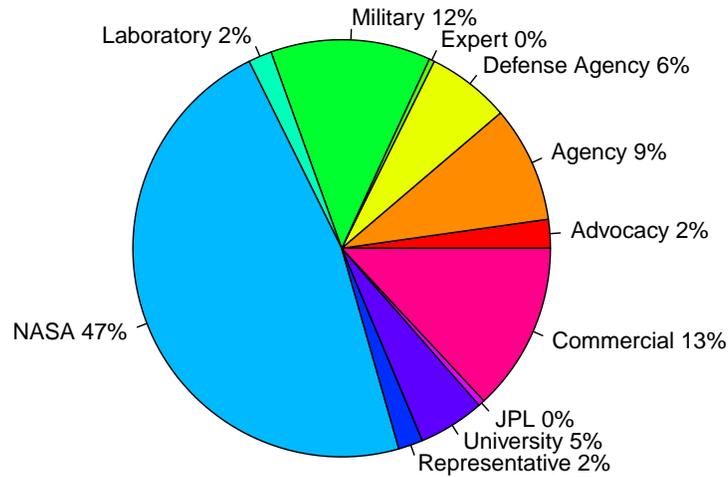


Figure 3: Results of Congressional Attention and Spending Change Regression Analysis

proportions and after 1965, witnesses from governmental agencies began to increase. With this data in mind, it will be next important to understand what other information can be found from these type of agent categories and what affect the information has had on NASA and Congressional decision making.

Human spaceflight was dominated by NASA's Manned Spacecraft Center in Houston, Texas as well as the Air Force and Department of Defense played great roles during the pre-Apollo era of spaceflight. Once again, manned spaceflight has been dominated by themes of futuristic wars; NASA's human spaceflight program was founded on the notion that the future of war would be in space and therefore the US should leave its mark. Eisenhower's "future theater of war" would have never left the ground without influence from agents and Congress'

decision to allocate funding to the pre and post-Apollo missions.

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