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Who's supporting space activities? An 'issue public' for US space policy

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ABSTRACT

Using data from the General Social Survey, this research identifies the issue public of US space policy. Highlighting the need to understand and identify the portion of the public that supports space activities, this study underscores the limited appeal of space for the public as a whole. We find that those who support space activities tend to be younger, male, Republican, and have a higher level of education and socioeconomic status. Because these characteristics make up a relatively small proportion of the American population, those supporting space activities must broaden the appeal of space, making it more accessible and understandable for those with whom the issue does not have much saliency.

With the orbiting of the Soviet satellite Sputnik on 4 October 1957, the USA was not only launched into a space race with its cold war opponent, but the American public was confronted with a distinctly different type of issue which pushed the boundaries of human imagining. With the ensuing establishment of the National Aeronautics and Space Administration (NASA) and the announcement by John F. Kennedy that the US goal in space would be the moon, the widely held perception was that US support for these efforts ran high. While this is questionable, it is quite clear that following the moon landings, public support for spending on space fell dramatically.

Today, the USA is at a crossroads in its space policy; the Space Shuttle has been retired with no clear replacement in sight. President Barack Obama and the Congress have signed on to a new vision of US space policy encouraging the development of private space vehicles and pushing NASA to construct a new heavy lift rocket and invest in future technologies. With a challenging of accepted policy, public support for space endeavors plays a critical role in influencing the eventual US direction in space.

This paper proposes to fill the gap in the understanding of public opinion concerning US space activities by examining its 'issue public'. I will use General Social Survey data from 1973 to 2010 to look at the dimensions of support for space spending with an eye to answering the question of who supports space exploration. Before turning to an analysis of opinion data on space, I will examine the relevant literature on issue publics, US space policy, and public opinion on space and NASA.

1. The influence of issue publics

First touched on by Converse, 'issue publics' are groups of people who strongly attach themselves to a particular issue and who act based on that attachment over a period of time. They can be categorized as the proportion of the voting public that are "relatively well informed about their issue and generally follow the actions of politicians the political parties on that issue" [1]. "The salient issue for an individual has a strong impact on his or her voting behavior" [2]. Converse argued that, because of the wide variety of issues on which to focus attention, issue publics are rarely large and "none embrace any clear majority of the electorate" [1]. In other words, issue publics are groups of voters intensely concerned on a given issue from which the rest of their political behavior, and in particular their voting behavior stems.

Similarly, Krosnick argued that issue publics arise because Americans spend little time involving themselves in politics; they thus form a sort of cognitive short cut through their position on a particular issue of some importance that guides their electoral behavior [3]. Because individual attachment to issues can come from any number of factors, including self-interest, social identification with relevant groups, or relation to social and personal attitudes [3], the range of issue publics is quite large. Krosnick himself examined issues ranging from unemployment and defense to women and Russia.

Converse's study found a number of issue publics, all varying in distinct size, with the largest being roughly 20% of his sample. Converse also noted that there is minimum overlap between these groups, arguing, "different controversies excite different people to the point of real opinion formation" [1]. Although certain issues are

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salient enough at times that a vast majority of the public may be attracted to vote based on such an issue (Iraq, the economy, and health care are examples), issue publics are distinct in that individuals are attached to them over a long period of time. While issue publics can exist based on the larger salient issues, the proportion of people who will base their political actions on them over an extended period of time is likely to be smaller as Converse argued.

The existence of issue publics could be taken for granted if we do not consider the role that they, and public opinion in general, play in democratic government. We must at least briefly consider the importance of public opinion. A number of scholars have found a link between public opinion and government through a variety of mechanisms such as elections [4,5] and political interpretation of the public "mood" [2,6,7]. However, in their study of congressional aides, Jacobs, Lawrence, Shapiro, and Smith found that public opinion polls may not be consulted as faithfully by politicians as the politicians would have the public believe [8]. Significantly, Lax and Phillips argued that the salience of issues may be important, suggesting that politicians are more likely to pay attention to public opinion when particular issues are high on the agenda [6].

2. US space policy and public opinion

While not ubiquitous, enough public opinion data on space have existed for scholars to examine the impact of public opinion on the space program as well as to describe opinion on space policy over time. Writing before the Kennedy decision to go to the moon, Gabriel Almond analyzed how public opinion had changed in the wake of the opening of the space age. Looking at public opinion data not only from the USA but also from Europe, he found that overall awareness not only of American activities but of Soviet successes was "extraordinarily high" and that it had affected people's conceptions of how advanced each state was [9].

In his study of public opinion and space, Roger Launius found that during the 1960s, "polls do not support a contention that Americans embraced the lunar landing mission" [10]. Utilizing a conglomeration of polls from organizations such as Gallup and the major news networks, Launius found that consistently throughout the 1960s, 45–60 percent of Americans believed that too much was being spent on US space activities [10]. These low levels of approval for the Moon program led Launius to conclude that "public support to the initial lunar landing decision was fleeting" and that "the public was never enthusiastic about human lunar exploration, and especially about the costs associated with it" [10].

Despite starting off with these relatively low levels of support, Launius found that public opinion on space and NASA itself would eventually rebound. From a Yankelovich poll, Launius cited a 70% favorable impression about the space program between the years 1978 and 1999 [10]. Paralleling public opinion on other issues, he also noted that, while supportive of space, Americans would rather spend the money on other programs. Handberg echoed this, writing that the "public's choice is usually to support the other priority as more socially necessary. NASA's budget and other programmatic needs always remain secondary because their political support is perceived as a mile wide but an inch deep" [11]. However, in an instance of pop culture influencing public opinion, Launius attributed a sharp uptick in support for human space activities relative to robotic exploration in the mid-1990s to the release of the movie *Apollo 13*. He argued that the release of films like *Armageddon*, *Deep Impact*, and the HBO mini-series *From the Earth to the Moon* in subsequent years have also helped "sustain public enthusiasm for human spaceflight" [10]. Of course, other major NASA accomplishments in this period, such as the rover Pathfinder that landed on Mars on the auspicious day of 4 July 1997, could also have influenced public opinion.

A rare *New York Times* article detailing public opinion data on US space policy from July 1988 confirms many of Launius's findings. The poll found that "40 percent of respondents said the USA was doing too little in space exploration" and that "55 percent said the agency [NASA] had done a good or excellent job" [12]. Specifically highlighted in the article, however, was a split between men and women on space activities; 56% of men responded that the US was doing too little with only 25% of women responding the same [12].

3. Research design

Given that space is a unique type of policy area and the misconceptions of strong public opinion in favor of space discussed above, what, or rather who, drives public opinion on space policy? What groups of people comprise the issue public for space policy? Here, I will consider the effects that age and birth cohort, party identification, education, socioeconomic status, and gender have on public opinion of space. Examining the issue public for space policy contributes to two topics: pure political considerations and the issue dynamics of space. First, identifying the rough boundaries on which groups support space more benefits politicians wishing to fight for or against a particular aspect of the US space program. Who can these politicians and agency officials count on for support or, alternatively, who must they persuade to gain more support? Second, as scholars attempt to explain the unique policy dynamics of the US space program, public opinion undoubtedly plays a role. Launius has noted that many proponents of space policy argue that, if the public would only support space efforts, more would be done toward that end [10]. Whether this sentiment is true or not (Launius argues it is not), identifying larger patterns of support or lack thereof may contribute to explanations as to how the space program has developed and the ways in which it might develop in the future.

The five variables to be examined (age, party, education, socioeconomic status, and gender) will not only provide a general view on the issue public surrounding space, but carry with them some assumptions of their own. Therefore, in performing this analysis, I have five expectations or hypotheses. First, as to age, those who experienced the space race of the 1960s may be more likely to look favorably on space activities; therefore I expect older generations will be more supportive of space programs. Second, I propose that Republicans will tend to support space activities at higher levels than Democrats, as some previous research has shown [13]. Third, I expect to find support for space associated with higher levels of education. While high-profile space activities like landing on the Moon are easily understood, those with less education may not as easily understand more routine activities like Space Shuttle missions and spin-off technologies. Fourth, related to education, I hypothesize that those with higher socioeconomic status will support space more. Finally, following from the *New York Times* finding that men supported space exploration more, I expect the data here to show similar results.

I utilize data from the General Social Survey (GSS) from 1973 to 2010 to perform the analysis. The GSS is a regularly administered face-to-face representative survey of the American public. Between 1972 and 1994, it was performed yearly except for 1979, 1981, and 1992; after 1994 it has been conducted biannually. The GSS administers questions ranging from basic demographics and political attitudes to issue-specific and topical questions. For the purposes of this research, I utilized the GSS question which asked respondents whether they believed the US was spending too much, about right, or too little on the "space exploration program." Years with data and thus included are: 1973–1978, 1980, 1982–1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, and 2010.

Even though there are gaps in the data, the continuous series provides a consistent monitor of public support for space spending.

Certainly, the GSS question is phrased differently from the question being considered above about support for space. However, it is not too much to assume that those people who support the space program would be willing to respond that we are spending the appropriate amount on exploration activities or that the USA is not spending enough. To ease comparison of opinion levels across different groups, I have combined the percentage who responded that spending was "about right" and the percentage saying that spending was "too little" into a "space support" score.

An additional concern may be for the time period; the GSS data do not begin until 1972, after the end of the Moon race in 1969. Some space policy scholars have argued that the 1960s is an aberration from its normal pattern [14,15]. In other words, because of the unique circumstances surrounding the space program of the time, the patterns generated during it cannot be assumed to hold any time after it. Thus, even though the GSS series does not begin until three years after the moon landings had begun, this does not mean the analysis is any less worthwhile; on the contrary, because we can rule out the 1960s and its extraordinary circumstances and patterns, the analysis performed here will be better suited to gauge actual patterns of public opinion on space.

The GSS survey also contains appropriate variables for the explanatory concepts outlined above, including the year respondents were born, party identification, years of education, socioeconomic indicators, and gender. Generational cohorts were broken into the following sets of years: 1883–1924, 1925–1945, 1946–1964, and 1965–1992. Since the GSS only interviews individuals 18 and older, the last cohort for whom information is available is the 1965–1992 generation. Since those born in 1965 did not come of age until 1983, data do not begin for that group until 1983.

GSS measures for party identification range on the traditional 0–6 Likert scale with 0 being a strong Democrat and 6 being a strong Republican. For the purposes of this analysis, I have recoded the data with categories 0–2 being treated as Democrats, category 3 separated out as true independents, and categories 4-6 being treated as Republicans. As to education, the survey provides data on the number of years of schooling respondents have completed. From these responses, I have created four educational attainment categories: less than a high school degree, high school degree, less than four years of college (categorized as less than a college degree), and four or more years of college (categorized as more than a college degree).

As for the appropriate variable to use to measure socioeconomic status, the GSS provides data for both income and a socioeconomic index, both of which have significant drawbacks. I have chosen to utilize the socioeconomic index variable because of its capability of distinguishing between higher SES levels; its scores range from 17.1 to 97.2. I have created four categories of roughly similar size from this distribution: low (scores 17.1–30), medium (scores 30.1–50), medium-high (scores 50.1–70), and high (scores 70.1–97.2).

4. Results

Fig. 1 displays the patterns of responses to the GSS question on whether the money being spent on space exploration is too little, about right, or too much in the aggregate from 1973 to 2010. The percentage responding that too little is being spent remains at a relatively low level in this time period, going from a low of 7.5% in 1973 and 1974 to a high of 19.7% in 1980. There are pronounced post-Apollo effects during the 1970s, wherein the percentage of people responding that too little is being spent begins to rise and the percentage responding that too much is being spent begins to fall. This corroborates Launius's argument that space enjoyed a higher level of support following the space race and adds to it the significant post-Apollo bump experienced in the early 1970s.

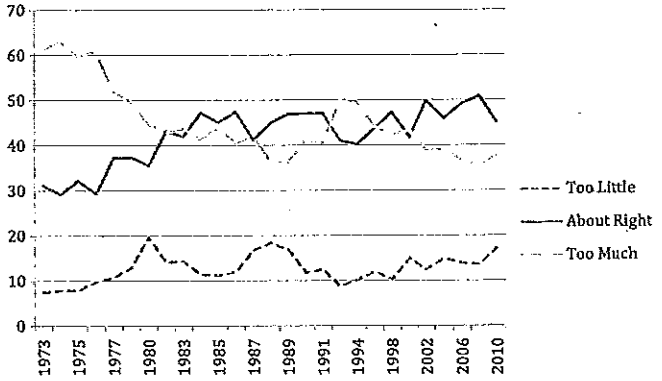

Fig. 1. Attitudes toward spending on space, 1973–2008.

The graph also shows that throughout this time period, those responding that the USA has spent too much on space and those saying spending levels have been about right have gone back and forth. However, since 2000, the gap between the two responses has begun to grow, with more saying that spending has been about right compared to too much.

Although clearer in figures below, changes in attitudes following the *Challenger* (1986) and *Columbia* (2003) accidents display different patterns. In the aggregate, after *Challenger* support scores rose from 56.3% in 1985 to 63.4% in 1988 for an increase of roughly seven percentage points. However, following *Columbia* in 2003, support scores dropped from 62.4% in 2002 to 60.9% in 2004 and rose again to 63.1% in 2006. Why the difference in public reaction? The changes could be attributed to three things. First, the baseline of support in the mid-1980s was much lower before *Challenger*. On the other hand, support for space exploration continued to rise throughout the 1990s so that by the time of the *Columbia* accident, support for space exploration was already relatively high. Second, the salience of space issues could have been much lower in 2003 compared to 1986 when the Space Shuttle program was in its early years and President Ronald Reagan was promoting his "star wars" (SDI) defense program. Finally, and possibly in combination with the lack of saliency, *Columbia* was not the first space disaster and coming off the heels of September 11 could have hit a public that was already desensitized to major disasters.

4.1. Age

While I previously hypothesized that older generations would be more supportive, the data provided by the GSS show that older generations have lower levels of support for space exploration. Although the data do fluctuate, those born between 1965 and 1990, who had the least amount of experience with the space race of the 1960s, display higher levels of support, with the generation of 1946–1964 following closely behind; for the 1965–1990 generation, support hits a high at 74.3% in 1989 while support from the 1946–1964 generation has a high of 70.3% in the same year. While some of the older members of the 1946–1964 generation undoubtedly have memories of the space race, so would members of the earlier two generations who display consistently lower support scores suggesting that age is important in influencing support for US space policy. In the two older generations, support for space never reaches more than 62.3%. Fig. 2

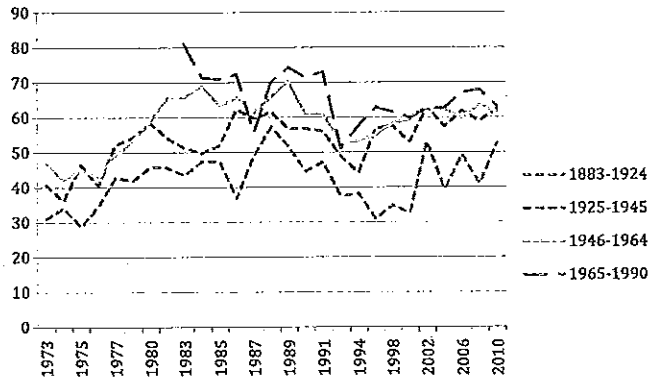

Fig. 2. Space support scores by cohort.

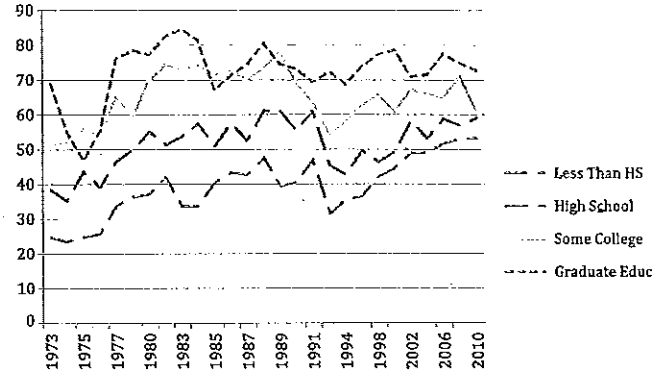

Fig. 4. Space support scores by educational level.

4.2. Party

With the exception of one year in the 1970s, Republicans display higher support scores. Democrats, on the other hand, display significantly lower support scores lending support to the hypothesis that Republicans support space exploration more. Republican support peaks at 76.9% in 1988, while Democratic support reaches only 59.6% in 2008. Fig. 3

4.3. Education

Fig. 4 displays the support scores for all the educational categories that support the proposition that those with higher education levels tend to support space more. While those with some college schooling and those with at least a college degree do show some overlap over time, the support scores generated by those two groups are clearly higher than those with of the groups a high school degree or below, with support in the groups with at least some college education hitting a high watermark in 1983 with a support score of 84.6%. On the other hand, between the other two groups, support for space is highest in 2006 with those with a high school degree having a support score of 58.8%.

Given that space is a highly technical issue, those with higher levels of education are more likely or more able to understand the technical aspects of the space program. These people can grasp the technological spin-offs that accrue because of space activities as well as less obvious space activities such as robotic and satellite exploration. While human spaceflight is easily visible and understandable, those with higher levels of education may better appreciate the full range of space activities.

4.4. Socioeconomic status

Fig. 5 generally bears out the expectations of the socioeconomic hypothesis- those with a higher SES tend to support space exploration more than those with a lower SES. From the beginning of the series in 1988 through the mid-1990s, patterns of support among the three highest levels of SES do switch places; however, those with the lowest SES consistently support space less than do the higher levels.

The findings regarding SES comport with the data regarding educational level. Similarly, we may surmise that those with a higher socioeconomic status are more disposed to understanding the complicated aspect of US space activities, including robotic exploration. However, there is an alternative explanation considering that determination of SES includes data on an individual's income. Because the US space program not only spends a significant amount of funds each year (just under $19 billion in 2010) but is discretionary by nature, those with a lower SES may not support spending government funds on such an endeavor, preferring instead that those funds be used on programs that concern them more directly.

The findings of support from that those who are younger, better educated, and have higher socioeconomic positions also indicate that space activities may be placed under the banner of postmaterialist values. Postmaterialism has been defined by a growing emphasis on goals beyond simple physical and economic security to more ephemeral ideas such as quality of life and freedom [16]. Those populations who have seemingly secured the basic necessities of life can therefore support discretionary activities such as space. This postmaterialist hypothesis also helps to explain why younger populations support space more than their older cohorts;

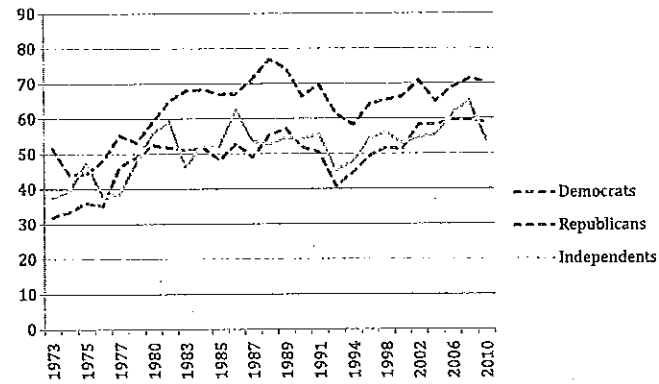

Fig. 3. Space support scores by party.

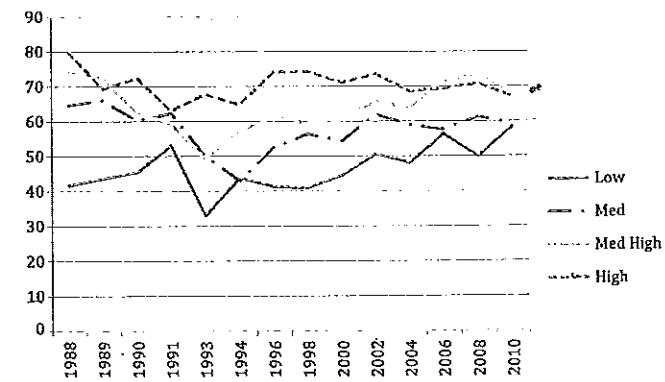

Fig. 5. Space support scores by SEI.

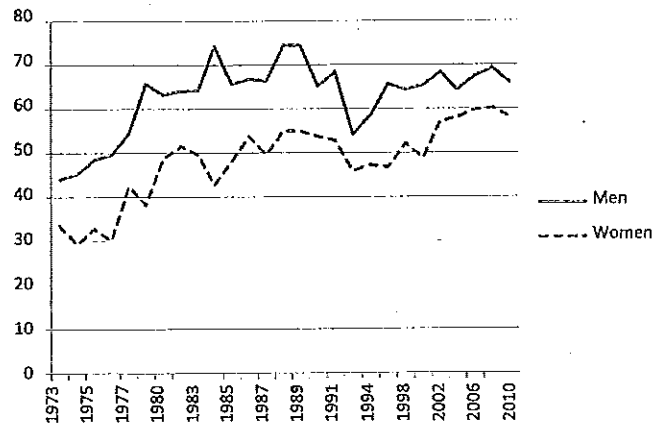

Fig. 6. Space support scores by gender.

indeed, Inglehart has argued that younger generations brought up in a postmaterialist society may be more likely to reflect such values [17]. Because younger people have been brought up in an age in which postmaterialism has been more prevalent, they are more comfortable in supporting such values and activities.

4.5. Gender

The final hypothesis to be tested is whether men support space more than women do. Anecdotal evidence exists to support this from a 1988 *New York Times* poll and the GSS data show that there is indeed a wide gender gap with respect to support for space exploration. While the gap narrows somewhat in the early 1990s as fewer men supported space exploration, support scores for men rebounded in later years. Fig. 6

While not always a flattering conclusion, this finding accords with previously established notions that women are less interested in scientific and mathematic fields, a designation that US space activities certainly falls under. Other social research has explored the varying reasons for this phenomenon including inherent biological differences between men and women, a bias against women in the math and science workforce, and the inculcation of stereotypes of women and racial minorities being somehow inferior in math and science [18–20]. What is interesting is that the gender gap has narrowed somewhat in later years moving from the widest gap in 1984 (where 74.3% of men supported space activities and 42.7% of women did) to its narrowest in 2004 (64.4% of men compared to 58% of women).

5. Conclusion

Based on this analysis, it seems that the issue public for space is younger, Republican, educated, male, and has a high socioeconomic status. Given that the portion of the public that conforms to these descriptions is fairly low, as the issue public literature suggests, this finding has a number of implications for US space policy. First of all, the portion of the public that is fairly supportive of space spending is small. In and of itself, this is not surprising. However, this also implies that the number of those voting based solely on space is most probably very low as well, in turn relegating space issues to a lower level of salience.

Second, this small issue public has relevance for politicians seeking either to enlarge or shrink US space activity. Those arguing against it have a large potential audience to which to argue their points. Even more significant is that those administration officials or representatives in Congress seeking to protect current interests in NASA and other space activities should strive to enlarge their audience. Although Launius has argued (as noted above) that it is unlikely that an upsurge in public support for the space program could serve as a panacea, it does not mean that enterprising politicians could not try to exploit the potential issue public in support of their own policy goals. Just because it has not happened or it is unlikely, does not mean that it cannot happen. In order to do this, elected officials must make space more relevant to those people with lower education and socioeconomic levels for whom what the USA does in space may not be as easily understood. Those seeking to expand US space activities should also seek to expand the portion of the public who understand and support space spending.

The conclusions presented here also suggest that space activities may fall under the framework of postmaterialist values. Given that space is a discretionary government activity, those individuals who are inclined toward such postmaterialist beliefs, including those who are younger and have higher levels of education and income, could constitute a larger base of support for space activities. The framework of postmaterialism, then, provides space policy analysts with a new point of view through which to view public support for the space program.

Finally, the relatively low levels of support for space spending reinforce the incremental approach to space policy making since the end of the space race. Because little support has existed for more expansive programs, NASA has been forced to advance its interests with one big project at a time, lurching from the Space Shuttle to the International Space Station.

The data presented here are meant primarily to identify the rough outlines of an issue public for space policy. This analysis does not specifically look at the causal mechanisms involved relating these personal characteristics to support for space. Because of the multicollinearity of some of the variables examined above (for instance, education and socioeconomic status), it would be inappropriate to comment regarding the causes of support. Further research examining support for space should focus on building multivariate models to help determine what causes individuals to support space activities. This line of research should also include an examination of the importance of space in the voting booth for those who express approval for space activities.

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