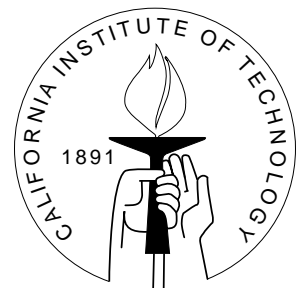DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91125

ATTACK POLITICS: WHO GOES NEGATIVE AND WHY?

Kyle Mattes

SOCIAL SCIENCE WORKING PAPER 1256

October 2006

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Abstract

I introduce a formal model of campaign strategy to show when candidates will engage in negative campaigning and how it can affect election results. The model separates campaign strategies by target (self or opponent) and dimension (issue or character), and defines negative campaigning as attacking one's opponent on the character dimension. Whether candidates choose negative campaigning depends upon three factors: the preconceptions of the voter, the voter's preferred dimension, and the candidate types. I show that eliminating negative campaigning has an ambiguous effect on voter welfare. In some cases, eliminating the negative option can hurt superior candidates.

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October 17, 2006

1 Introduction

Few campaign strategies are as maligned as negative campaigning. Take this advertisement, for example:

> "State Representative Randy Graf hung a picture of President Bush in [Graf's] office upside-down, because he *disagrees* with him! Graf's actions are disrespectful and wrong, especially in a time of war. *Randy Graf* has it upside-down. Congressman Jim Kolbe proudly hangs the President's picture in his office right-side up. President Bush endorses Kolbe because he is dedicated to the fight for freedom and lower taxes."(Jamestown Associates, 2004)

Here, Kolbe insinuates that his opponent Randy Graf is a traitor and bases this accusation upon Graf's inappropriate handling of a photograph. While potentially engaging for staunch Bush or Kolbe supporters, the advertisement probably comes off as specious character assassination to many others. Whenever the mudslinging becomes baseless or trifling, political observers fulminate against the offending candidates. They accuse candidates who engage in negative campaigning of being manipulators, slanderers, or liars. And candidates who adopt a negative approach are frequently accused of purposefully angering the electorate in order to reduce voter turnout. Political analysts claim that "in overwhelming numbers, people say that negative campaigning is wrong and is damaging to our democracy" (Carr 2002), and the leaders of the Anglican church have called for an end to negative campaigning (Watt 2001).[1] Some political candidates have also ventured to state their opposition

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*Division of the Humanities and Social Sciences, Caltech, Pasadena, CA, 91125. Email: mattes@caltech.edu.

[1]Carr (2002) is quoting Kathryn Hunt of the University of Maine's Margaret Chase Smith Center for Public Policy.

directly. For example, Kathleen Brown, in the 1994 California gubernatorial race, implored all candidates to sign her proposal to "run a different kind of campaign. No negative ads bashing your opponent, but instead an election about the issues."(Stanford PCL). Would political discourse really be better off without negative campaigning?

Undeniably, negative campaigning provides information to the voters and is often a fundamental part of candidates' campaign strategies. Arguing that it should be eliminated essentially claims that it provides no *useful* information, and that it can never help a superior candidate win an election. So, in order to assess the critiques of negative campaigning, one must ask: Who goes negative, when do they go negative, and how does it impact election results?

In this paper, I answer these questions with a formal model of campaign strategy. I separate campaign strategies into those focused on political issues and those focused on character traits. Negative campaigning is defined as attacking one's opponent on the character dimension. With this model, I find that the type of campaign chosen by political candidates depends upon three factors: the traits of the candidates, the preconceptions of the voters, and the deviation from voter expectations of the information presented to them. This helps to understand why one cannot rely on simple benchmarks, such as the closeness of the race, to determine optimal candidate strategies. Finally, I show that while in some cases, eliminating negative campaigning provides voters with more useful information, in other cases it makes the candidates impossible to distinguish. One cannot use a broad sword to cut away all of the negativity from a campaign without permitting inferior candidates to slip into office through the resulting gaps.

2 What is Negative Campaigning?

In order to answer these questions, we need a formal definition of negative campaigning. It should capture the fundamental aspects that make campaign themes negative and also allow for easy comparison with other campaign styles. Specifically, it should distinguish between promoting oneself and attacking the opponent while also separating campaigning on political issues from campaigning on character traits. This distinction is important but certainly not a recent innovation, since character has long been recognized as prominent to political persuasion.[2] While political issues (such as gun control, abortion, and UN relations) are generally conceived on a left-right continuum (Poole and Rosenthal 1985), character issues

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[2] Aristotle, in the Rhetoric, (Book 1, Chapter 2) argued that "of the modes of persuasion furnished by the spoken word there are three kinds. The first kind depends on the personal character of the speaker; the second on putting the audience into a certain frame of mind; the third on the proof, or apparent proof, provided by the words of the speech itself." (Aristotle, ed. Honeycutt 2004).

(such as honesty, competence, and leadership ability) are more accurately represented by a valence dimension.[3] A valence dimension measures an attribute on which all voters have the same preferences, generally preferring more to less (or vice versa). The current literature on negative campaigning does not provide a clear definition of campaign strategies across both the ideology and character dimensions. As a result, there is a lack of consensus on the meaning of the important terms regarding negative campaigning. This can be resolved by using the simple construct I outline below.

Four Campaign Types

A framework with two dimensions and two candidates suggests four different campaign possibilities. The following matrix delineates each campaign type:

Table 1: Four Campaign Types

	Issue Dimension	Character Dimension
Talk about one's opponent	**Issue Differentiation**	**Negative Campaigning**
Talk about oneself	**Issue Bolstering**	**Positive Campaigning**

Each of the four main cells in Table 1 represents a different campaign strategy. As the table shows, I specifically define *negative campaigning* as campaigning against an opponent on the character dimension. In this framework, stating that an opponent has the wrong stance on political issues is *issue differentiation*, which is a separate campaign strategy from negative campaigning. Issue campaigning, while it may be caustic in tone, is not negative in the sense that it impugns character, hence the separation by dimension. Also shown in Table 1 are the two self-promotional campaign types. Discussing one's own valence qualities is defined as *positive campaigning*, and promoting one's own position is *issue bolstering*.

Of course, most political advertisements are not confined to a single dimension, but instead combine various different themes. This framework captures the overarching themes that appear in multiple campaign advertisements, and it is these themes which can be categorized into specific dimensions and campaign types.

Why Include Character Campaigning?

Including a valence dimension provides a simple means of separating political issues, on which voters have varied opinions, from character traits, about which voters' preferences essentially agree. Stokes (1992) shows that *both* left-right and valence dimensions are needed to accurately represent voters' preferences. Popkin (1991) argues that voters use personal information about a candidate as a proxy for information that is otherwise difficult to obtain – specifically, evidence regarding how that candidate might behave in office. Furthermore,

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[3]see Stokes (1992)

psychological studies show that when individuals form impressions of situations or other people, they weigh negative information more heavily than positive (Fiske 1980; Hamilton and Zanna 1972). Impressions formed on the basis of negative information, moreover, tend to be more lasting and more resistant to change (Cobb and Kuklinski 1997). As character is an important aspect of politics, character assaults are nothing new, and are certainly not going away. They have been prominent in politics throughout the history of the United States. For example, John Adams' supporters accused Thomas Jefferson of being an atheist, the Van Buren campaign attempted but failed to brand William Henry Harrison as broken-down and incompetent, and proponents of James Blaine mocked Grover Cleveland's admitted infidelity (Ferling 2004; Cleaves 1939; Troy 1996).

Other Approaches to Negative Campaigning

Some observers make the error of evaluating the veracity of the advertising to determine its negativity.[4] The underlying problem is, as West (1993) explains, that "observers often define negativity as anything they do not like about campaigns." While the truth of the statements contained within the ads is clearly important, it is a separate issue from the style of the campaign. Nearly everyone is in agreement that campaign strategies involving calumny can harm the political system. However, not all negative campaigning is mendacious, nor are all lies negative campaigning. Candidates can just as easily lie (or stretch the truth) about themselves as they can present misinformation about their opponents.

Instead, I use a paradigm similar to that of Polburn and Yi (2006), in which candidates can campaign on either ideology or character. My model differs from theirs in that I give candidates a more complete set of campaign choices. I show that when candidates are also able to campaign about their own character (positive campaigning) and their opponents' ideological position (issue differentiation), in some cases eliminating negative campaigning can improve voter welfare.

Other formal studies of negative campaigning have not addressed the fundamental distinction between issue and character campaigning, and instead offer a very broad definition of the term.[5] For example, Skaperdas and Grofman (1995) define negative campaigning as "that which attacks the other candidate personally, the issues for which the other candidate stands, or the party of the other candidate." Lau and Pomper (2002) say that "negative campaigning is talking about the opponent – his or her programs, accomplishments, qualifications, associates, and so on – with the focus, usually, on the defects of these attributes."

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[4]For further explanations in support of this argument, see Lau and Pomper (2002) and Mayer (1996).

[5]Although in the model of Harrington and Hess (1994), candidates inherit initial locations on both a valence and an issue dimension, they are restricted to campaiging on the issue dimension. Negative campaigning is defined as relocating your opponent on the issue dimension; positive campaigning is relocating yourself on the issue dimension.

These definitions equate negative campaigning with "campaigning against an opponent", a category that covers nearly the entire spectrum of political advertising. But there are many reasons to invoke an opponent's name during political discourse. Mayer (1996) argues that "any serious, substantive discussion about what a candidate intends to do after the election can only be conducted by talking about the flaws and shortcomings of current policies." This means that for candidates challenging incumbents, campaigning about political issues *requires* campaigning against the opponent. For example, if a challenger intends to lower taxes, implicit in that argument is the disapproval of the current tax rate. But, there is little explanatory power gained by labeling every challenger's issue ads as negative. Comparisons, which are often necessary, also provide voters with a better standard of evaluation (Ansolabehere and Iyengar, 1995). If an opponent is against the death penalty, stating that fact should be considered issue differentiation, and not negative campaigning. Using broader definitions conflates vastly different campaign strategies into the general category of "negative", making it more difficult to establish the distinction between character campaigning and issue campaigning.

Some analysts focus on other aspects of political strategy that are interesting but not unique to negative campaigning. For example, although Ansolabehere and Iyengar (1995) do not provide an explicit definition, they imply that negative campaigning equates to negative tone. However, the tone of an advertisement can be difficult to determine. Sigelman and Kugler (2003) show that voters can strongly disagree in their perceptions about the tone of a given campaign. This is why it is much more informative to demarcate campaign strategies by their overall content and themes. The Jim Kolbe advertisement cited above does not need sinister music or a threatening announcer for it to be categorized as predominantly negative. It is negative because it calls Randy Graf disrespectful, and implies that he is a traitor. Skaperdas and Grofman (1995) assume that positive campaigning attracts undecided voters only, while negative campaigning turns the opponent's supporters into undecided voters, and creates a boomerang effect in which the attacker loses his own voters to the undecided pool. In another example, Hinich and Munger (1989) assume that candidates use negative campaigning to increase the variance of their opponent's policy, and positive campaigning to decrease the variance of their own policy. This systematically proscribes a candidate from clarifying an opponent's extremist position (e.g. by providing details of his voting record) or clarifying an opponent's reprobate character (e.g. by providing details of his police record). In other words, going negative does not necessarily entail creating uncertainty about an opponent.

All of this has confused the empirical literature. Because of the lack of a precise, consensus definition of negative campaigning, there is no solid foundation for empirical research on the subject. Thus, it is no surprise that the outcomes of empirical studies are inconsis-

tent. For example, Ansolabehere and Iyengar (1995) concluded that negative campaigning *decreases* turnout; Wattenberg and Brians (1999) and Freedman and Goldstein (1999) determined that it *increases* turnout; Finkel and Geer (1998) found *no consistent effect* between negative campaigning and turnout. In another line of research, Theilmann and Wilhite (1998) found that a candidate tends to go negative if behind or in a dead heat. However, Sigelman and Buell (2003) found that in U.S. presidential races, major-party tickets were far more attack-oriented only if their election prospects looked bleak. Yet, Sigelman and Shiraev (2002) concluded that the relative negativity of the candidates is *not* a function of who is ahead and who is behind, and that candidates rarely adjust their strategies due to the ebb and flow of the campaign. Plus, Lau and Pomper (2001) showed that position in the polls does *not* affect a candidate's usage of negative strategies. In a meta-analysis of empirical studies of negative campaigning, Lau et al. (1999) found no reliable statistical basis for concluding that negative ads are liked less than positive ones, or that negative political ads are more effective than positive political ads, or that negative campaigning affects voter turnout.

The difficulty in obtaining consistent empirical results indicates the need to use a definition of negative campaigning that allows the demarcation of campaign themes into the four types presented in Table 1. In the next section, I incorporate these campaign types into a theoretical model that can be used as a foundation to understand the fundamental aspects of campaign strategy decisions. This framework also facilitates a shift in focus from discrete ads, which often combine multiple themes, to the underlying campaign strategy, in which themes are more readily separable.[6] Most importantly, it provides answers to the original questions posed earlier: Who goes negative, when do they go negative, and how does it impact election results?

3   The General Model

In this section, I incorporate the matrix of campaign strategy definitions from Section 2 into a formal model of campaign strategy. The model is a game for political campaigns, in which candidates maximize their standing with the electorate via the optimal dissemination of information. In the basic form of this model, there are two candidates, A and B. The two candidates inherit positions on each of two separable dimensions, Issues and Character. The issue dimension, I, is the traditional left-right dimension, given by the set $\{-1, 0, 1\}$.

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[6]The Kolbe ad above, for example, combines character attacks on Graf with a non-sequitur about Kolbe's stand on taxation. Since political commericals can incorporate many themes, it is better to look at the array of advertisements offered by a campaign before determining the candidate's politcal strategy. One negative comment does not necessarily constitute a negative strategy.

The character dimension, C, is a valence dimension, given by the set $\{-x, x\}$.

There is one voter, V.[7] Preferences of the voter are single-peaked on the issue dimension, and the voter's ideal policy point is 0. By definition, the voter always prefers higher values on the valence dimension. Thus, the voter's ideal point in (I, C) space is $(0, x)$. She represents the preferences of the median voter on the issue dimension, and of every voter on the valence dimension.[8]

Candidates campaign by revealing the true location of one candidate on one dimension, which will create a baseline for analyzing candidates' strategic behavior. The goal of the voter is to maximize her expected utility. Using the candidates' campaign messages and her prior information, she will attempt to determine both the issue position and the character type of the two candidates, A and B. The voter's utility function for candidate ℓ is:

$$U_V(\ell) = -|(I_\ell)| + (C_\ell) \tag{1}$$

So, the voter will choose the candidate ℓ that maximizes the expected value of $U_V(\ell)$. In the case of a tie, the voter will flip a coin to choose between the candidates. The winning candidate implements his preferred policy and receives a utility, β, from winning the election, and zero from losing the election. So the utility function for candidate ℓ is $U_\ell = \beta \omega_\ell$, where ω_ℓ is the probability of candidate ℓ winning the election.

3.1   Candidate Locations

Initially, the candidates' locations $\theta_\ell = (I_\ell, C_\ell)$ are assigned by nature and both are known to the candidates, but not known to the voter.[9] However, the voter is aware that the type θ_ℓ of each candidate has been drawn independently from $\Theta = [\{-1, 0, 1\} \times \{x, -x\}]$ with the following distribution:[10]

The value p is the probability that a candidate has good personal qualities (x), while $1 - p$ is the probability he has undesirable character traits $(-x)$. Furthermore, each candidate has probability $1 - 2q$ of being a centrist, and probability q of favoring each extreme.[11] Since p and q are independent, at this stage the voter's expected utility is $-2q + x(2p - 1)$. Since

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[7]For consistency, I will heretofore assume that the voter is female and the candidates are male.

[8]With perfect information, the Median Voter Theorem holds in a space with voters having single-peaked preferences on the issue dimension, and nondecreasing preferences on one valence dimension (see Groseclose 1999).

[9]The important point is that a candidate will know his opponent's position better than the voter does.

[10]Although simple, this provide enough richness to capture all of the relevant cases (i.e. one candidate is better on both dimensions; each candidate is better on one dimension; candidates are equal on one or more dimensions).

[11]An alternative formulation, in which the variance is different for each candidate (e.g. one candidate is the incumbent), is presented in the appendix.

the voter has Euclidean preferences on the issue dimension, the issue positions of -1 and 1 are mathematically identical when calculating the voter's expected utility.

The x term, which also defines the character dimension's range, captures the importance to the voter of the issue dimension relative to the character dimension.[12]   As the value of x increases, this can be interpreted as the voter caring more about the character dimension relative to the issue dimension.   Note that the issue dimension range is normalized at $[-1, 1]$ to better capture these effects.   So, if the voter cares mainly about personal qualities, x will be of high magnitude and dwarf the utility effects of political issues.   Conversely, if the voter cares mainly about policy issues, this will be represented by near-zero values of x.

This one-period game consists of two phases: the campaign phase and the voting phase.

3.2   Campaign Phase

In this game, each candidate has a limited budget, so he can choose exactly one campaign type.   Although simplified, this is consistent with the fact that campaigns generally have an overarching theme.   A candidate's campaign is the announcement of one of the four unknown locations.[13]   That is, a candidate can choose from among the campaign strategies originally shown in Table 1:

Issue Differentiation: Revealing the opponent's location on the issue dimension.

Issue Bolstering: Revealing one's own location on the issue dimension.

Negative Campaigning: Revealing the opponent's location on the character dimension.

Positive Campaigning: Revealing one's own location on the character dimension.

Formally, this means that each candidate ℓ must simultaneously choose a strategy s_ℓ : $[\{x, -x\} \times \{-1, 0, 1\}]^2 \to \Sigma$, where

$$\Sigma : \{(C_A = x), (C_A = -x), (C_B = x), (C_B = -x), (I_A = 0), (I_A = \pm 1), (I_B = 0)(I_B = \pm 1)\} \tag{2}$$

On line (2) above, each action $a \in \Sigma$ is designated by the notation $(D_\ell = \iota)$, where D is the dimension of revelation, ℓ is the candidate whose information is provided, and ι is the location.   For example, $(C_A = x)$ means that candidate A is revealed to be located at x on the character dimension.   While Σ contains eight different types of messages, the realization of θ_A and θ_B limits the possible choices from Σ to four.

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[12]It is convenient to use x as a weight.   It technically consists of two components: the weight (w) the voter gives character relative to issues, and the range (ν) of the character dimension.   Thus, the voter utility function could be alternatively written as: $U_V(\ell) = -|(I_\ell)| + w * (C_\ell)$, where $E(C_\ell) = v(2p - 1)$ and $v = 1$.

[13]This can be thought of as the theme that the candidate most emphasizes during his campaign.

Notice that each of the possible campaign choices leads to a change in the voter's expected utility for one of the two candidates. Each candidate ℓ improves his standing in the election whenever his campaign announcement $a_\ell \in \Sigma$ increases the voter's expected utility for ℓ or decreases the voter's expected utility for $-\ell$. Let $d_\ell(a_\ell, a_{-\ell})$ indicate the benefit to candidate ℓ from employing campaign strategy a_ℓ with voter posterior beliefs μ and the opponent using strategy $a_{-\ell}$. In other words, the function $d_\ell(a_\ell, a_{-\ell})$ shows changes in the voter's utility difference between the candidates, and can be written as:

$$d_\ell(a) = E_\mu[U_V(\ell) \mid a] - E_\mu[U_V(-\ell) \mid a] \tag{3}$$

3.3   Voting Phase

In this phase, the voter chooses the candidate who gives her the highest expected utility. In making this decision, the voter must rely on both her prior knowledge of the location distribution and the information given her by the candidates via the two campaign themes.[14] Although there is undoubtedly a wide range of analytic ability which can be ascribed to voters, I will consider two archetypes of voter, described as follows:[15]

Naive voter: The voter accepts the candidates' two announcements $a \in \Sigma$, but does not consider the impact of the information revelation on any other dimension.

Sophisticated voter: The voter assumes that the revelation of a candidate may also give information about the traits (of both candidates) that the candidate did *not* reveal. She uses the information revealed by the candidates *and* the candidates' entire announcement strategies $s(\theta)$ to refine her understanding of the candidates' spatial positions.

The voter, regardless of analytic ability, is not perfect. In any election, she has the probability $\varepsilon(d_\ell(a)) \rightarrow [0, \frac{1}{2}]$ of "miscalculating" and voting for the wrong candidate. I assume that $\varepsilon(0) \leq \frac{1}{2}$, that $\varepsilon(z) > 0 \ \forall z$, that the function ε is monotonic, and that the first derivative $\varepsilon' < 0$.[16]   So, as the difference between the candidates increases, the voter is less likely to err. Because the probability of winning also increases with the utility difference between candidates, this helps avoid situations where losing candidates can pick any campaign strategy in equilibrium.

When discussing election outcomes, candidate ℓ is said to "win" the election if the voter *intends to vote* for candidate ℓ because ℓ gives her a higher expected utility. In this case, ℓ's opponent, $-\ell$, is said to "lose" the election. If the voter has the same expected utility

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[14]In this model, the voter cannot seek out information on her own.

[15]Eyster and Rabin (2005), citing "evidence that people do not fully take into account how other people's actions depend on these other people's information," model a cursed equilibrium in which players' analytical abilities lie on a continuum between Bayesian updating and ignoring updating altogether.

[16]For example, a quantal response function would fit these criteria.

for each candidate, the race will be called a tie, regardless of the coin flip outcome or the subsequent vote.

4   Results

In this section, I use the general model to answer the questions on negative campaigning that I posed above. First, I define an equilibrium for this game and prove existence. Then, I explain how the candidates will choose strategies, and later, I discuss election outcomes with a particular emphasis on the importance of negative campaigning. I begin by assuming that the voter is of the naive type.

4.1   Elections With a Naive Voter

DEFINITION 1 *Naive Voter Equilibrium*

The *equilibrium* concept for this game is perfect Bayesian in pure strategies. Thus, for each candidate ℓ and for the voter V, the equilibrium consists of:

(1)   Candidate strategies $\tilde{s}_\ell(\theta_\ell, \theta_{-\ell}) \in \arg\max_\ell \omega_\ell(s_\ell, \tilde{s}_{-\ell}(\theta), \tilde{\tau}, \theta)$

where $\omega_\ell(s_\ell, \tilde{s}_{-\ell}(\theta), \tilde{\tau}, \theta) = \tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)) + (1 - 2\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)))\, \varepsilon(d_\ell(s_\ell(\theta), \tilde{s}_{-\ell}(\theta)))$

(2)   Voter strategies $\tilde{\tau}(a) \in \arg\max E_\mu U_V(\tilde{s}, \tau)$

(3)   Voter posterior beliefs $\mu(\theta \mid a)$ are identical to the voter's prior beliefs about the probability distribution unless the candidate location is directly revealed by a.

It follows from (1) that if the voter chooses candidate ℓ, his probability of winning, $\omega_\ell(s_\ell, \tilde{s}_{-\ell}(\theta), \tilde{\tau}, \theta) = 1 - \varepsilon(d_\ell(s_\ell(\theta), \tilde{s}_{-\ell}(\theta)))$. But if the voter chooses candidate $\ell's$ opponent, his probability of winning is only $\varepsilon(d_\ell(s_\ell(\theta), \tilde{s}_{-\ell}(\theta)))$, which is the chance of voter error. Furthermore, this definition simply requires that the voter maximizes her expected utility, and that each candidate ℓ is using a best response to the opponent's equilibrium strategy $\tilde{s}_{-\ell}$. In other words, given the strategy of his opponent, a candidate should not have any incentive to change strategies.□

PROPOSITION 1 *There always exists an equilibrium if the voter is naive.*

Explanation and Proof. In equilibrium, the voter strategy is simply to vote for the candidate that yields the highest expected utility given her beliefs. Thus if $E_\mu U_V(\ell) > E_\mu U_V(-\ell)$, then $\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)) = (1, 0)$ for ℓ and $-\ell$, respectively. In the case where $E_\mu U_V(\ell) = E_\mu U_V(-\ell)$, $\tilde{\tau} = (\frac{1}{2}, \frac{1}{2})$, and then $\omega_\ell = \frac{1}{2}$ for each candidate. Candidates maximize $d_\ell(a_\ell)$, where a_ℓ is any of the four possible disclosures. They do not have to take into account the opponent's strategy $a_{-\ell}$, because the voter cannot make any inferences from the

campaign styles that either candidate did *not* choose. So, $d_\ell(a_\ell) = E[U_V(\ell) \mid a_\ell] - E[U_V(-\ell) \mid a_\ell]$. The voter's original expected utility for each candidate, $U_V(\ell)$, is $-2q + x(2p-1)$. Calculating $d_\ell(a_\ell)$ in the naive voter case just requires computing the change in the voter's expected utility once the voter learns that a_ℓ is true. Issue differentiation changes $U_V(-\ell)$ by $1 - 2q$, while issue bolstering changes $U_V(\ell)$ by $2q$. Negative campaigning changes $U_V(-\ell)$ by $2xp$, while positive campaigning changes $U_V(\ell)$ by $2x(1-p)$. Because $\varepsilon(d_\ell(s_\ell(\theta), \tilde{s}_{-\ell}(\theta)))$ is monotonic, a candidate who chooses a_ℓ to maximize $d_\ell(a_\ell, a_{-\ell})$ also maximizes his probability of winning the election. Therefore, choosing any option other than the action a_ℓ that maximizes $d_\ell(a_\ell)$ is a dominated strategy because it lowers a candidate's probability of winning. ∎

So, candidates will try to find a dimension to which the voter will be most responsive. Three factors determine the campaign themes chosen. First is the dimension that is most important to the voter. For example, character campaigning is more likely as x increases. To see this, define P as the larger of p and $1 - p$, and Q as the larger of $2q$ and $1 - 2q$. So, P designates which character strategy has the highest potential upside, while Q does the same for issue strategies. Character campaigning is preferred whenever $x > \frac{Q}{2P}$; issue campaigning when $x < \frac{Q}{2P}$. The second factor is the voter's preconceptions about each dimension. The voter's prior beliefs about candidates' issue stances and character traits determine which campaign strategy will provide information that most diverges from those preconceptions. For example, when p increases, she believes that candidates are better people, and so negative campaigning becomes a more effective strategy because it provides a greater deviation from the voter's prior expectations. Whenever $p > \frac{1}{2}$, negative campaigning will be more effective than positive, and whenever $2q > \frac{1}{2}$, issue bolstering will be more effective than issue differentiation. The third key factor is the realization of candidate types.

Following is an example of strategy choice at work.

EXAMPLE **1** *Candidates With Different Strengths*

Assume that candidate A is $(\pm 1, x)$, candidate B is $(0, -x)$, $p = \frac{3}{4}$, $q = \frac{1}{3}$, and $x = 1$.

In other words, candidate A is an extremist with good valence characteristics, and candidate B is a moderate with bad valence characteristics. But from the voter's perspective, each candidate is a good guy with probability $\frac{3}{4}$, bad with probability $\frac{1}{4}$, an extremist with probability $\frac{2}{3}$, and a moderate with probability $\frac{1}{3}$. Since $\frac{Q}{2P} = \frac{4}{9} < x$ and $p > \frac{1}{2}$, negative campaigning is optimal. Notice that this is just another way of saying that negative campaigning, if available as a strategy (i.e. the opponent is a bad character type), maximizes $d_\ell(a_\ell)$. However, candidate B, due to his opponent's valence advantage, is forced to campaign on the issue dimension. While A employs negative campaigning, B resorts to his best option, issue bolstering. ∎

Example 1 shows how highly dissimilar campaigns can occur whenever there are highly dissimilar opponents. Just because two candidates employ wildly different tactics does not mean that one of those candidates is making a strategic blunder. Based upon this paradigm, we should generally *expect* political campaigns to differ in content. This is due not only to the wide variety of candidates that run for political office, but also to the changing relevance to voters of political and candidate-specific issues.

I will now move forward and discuss election outcomes. For instance, in Example 1, while A uses an ideal theme (negative campaigning) and wins the election, B's best option is to continue with issue bolstering.[17] Perhaps unsurprisingly, a candidate who is better on both dimensions will win the election.

PROPOSITION **2** *Let ℓ be a **strictly better candidate** than $-\ell$ if $C_\ell > C_{-\ell}$ and $|I_\ell| < |I_{-\ell}|$. A strictly better candidate will always win the election.*

Proof. Without loss of generality, assume that candidate A is $(\pm 1, -x)$ and candidate B is $(0, x)$. Before the campaign phase, a vote for either candidate gives equal expected utility to the voter. However, every campaign revelation will either improve voter utility from electing B or reduce voter utility from electing A. As a result, the strictly better candidate, B, will win the election. ∎

While it is encouraging that strictly better candidates will win elections, this result does not carry over to weakly better candidates, as shown below.

PROPOSITION **3** *Let ℓ be a **weakly better candidate** than $-\ell$ if $C_\ell \geq C_{-\ell}$ and $|I_\ell| \leq |I_{-\ell}|$, with at least one of these being a strict inequality. A weakly better candidate will not always win the election.*

Proof. Example 2 below demonstrates this. ∎

EXAMPLE **2** *A Weakly Better Candidate*

Assume that candidate A is $(0, -x)$, candidate B is $(\pm 1, -x)$, $p = \frac{3}{4}$, $q = \frac{1}{3}$, and $x = 1$.

In other words, candidate A is a moderate with bad valence characteristics, and candidate B is an extremist with bad valence characteristics. Because, just as in Example 1, a negative campaign maximizes $d_\ell(a_\ell)$, in equilibrium both candidates will be mudslinging, and the race will end in a dead heat. ∎

Here, the voter defines character as the dimension of competition. Because the voter prefers to know about valence characteristics, she never gets the opportunity to learn about

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[17]Note that whenever $2q > 2Px$, then issue bolstering will win for A. If $1 - 2q > 2Px$, then issue differentiation will win for A. If $Q < 2px$, then negative campaigning will win for B, and if $Q < 2x(1-p)$, then positive campaigning will win for B.

political issues. In fact, efforts by a candidate to concentrate on policy issues will backfire, because he will have remained silent about character, which is the dimension most important to the voter. Because it isn't possible to give the voter perfect information by making every dimension salient in the political debate, a weakly better candidate may lose.

A simple remedy to improve the election outcome in Example 2 would be to eliminate negative campaigning. This would shift the campaign to the issue dimension, on which A is a clear winner.

In general, negative campaigning will hurt election outcomes (by giving an inferior candidate a much better chance to win) whenever the following two conditions are met. First, the voter must care mainly about character issues and second, candidates must have similarly poor character traits but significantly different issue positions.

However, as Example 3 shows below, in some elections negative campaigning is the only way to weed out an inferior candidate.

EXAMPLE **3** *Another Weakly Better Candidate*

Assume that candidate A is $(0, x)$, candidate B is $(0, -x)$, and that $p = \frac{3}{4}$, $q = \frac{1}{3}$, and $x = 1$.

In other words, both candidates are moderates and A is of superior character. As in the previous examples, negative campaigning is the ideal campaign theme. Without interference, A will choose negative campaigning, and B will choose issue bolstering. However, once the option of negative campaigning is removed, A will also choose issue bolstering. But now, the race will be a tie. In this example, negative campaigning improves voter welfare because it allows the identity of the messenger to outweigh the theme of his message. ∎

Negative campaigning is more likely to affect election outcomes when the voter cares strongly about character ($x > \frac{Q}{2P}$) and has a generally positive opinion of candidates ($p > \frac{1}{2}$).[18] Interestingly, in a world of truthful revelations, only a candidate of bad character will strive to eliminate negative campaigning. As in Example 2, he may be trying highlight his issue advantage. Or, as in Example 3, he might be hoping to hide his character disadvantage and move the fight to a more neutral ground. The intricacies of the situation will dictate whether a shift away from negative campaigning will help or hinder the political environment.

4.2   Elections with a Sophisticated Voter

Next, I consider elections with a sophisticated voter who uses Bayesian updating to analyze the candidates' campaign revelations. As with the naive voter variant, this game always has an equilibrium.

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[18]Recall that P is the larger of p and $1 - p$, and Q is the larger of $2q$ and $1 - 2q$.

DEFINITION **2** *Sophisticated Voter Equilibrium*

The *equilibrium* concept for this game is perfect Bayesian in pure strategies. Thus, for each candidate ℓ and for the voter V, the equilibrium consists of:

(1) Candidate strategies $\tilde{s}_\ell(\theta_\ell, \theta_{-\ell}) \in \arg\max_\ell \omega_\ell(s_\ell, \tilde{s}_{-\ell}(\theta), \tilde{\tau}, \theta)$

where $\omega_\ell(s_\ell, \tilde{s}_{-\ell}(\theta), \tilde{\tau}, \theta) = \tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)) + (1 - 2\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)))\, \varepsilon(d_\ell(s_\ell(\theta), \tilde{s}_{-\ell}(\theta)))$

(2) Voter strategies $\tilde{\tau}(a) \in \arg\max E_\mu U_V(s, \tau)$

(3) Voter posterior beliefs $\mu(\theta \mid a)$ which is a probability distribution derived from Bayes' law using $\tilde{s}$ whenever possible.

The difference between this and Definition 1 is in the rules governing voter posterior beliefs $\mu(\theta \mid a)$, as the sophisticated voter makes use of Bayesian updating. As with the Naive Voter Equilibrium, the voter must be maximizing her expected utility, and each candidate ℓ must be using a best response to the opponent's equilibrium strategy $\tilde{s}_{-\ell}$.□

Consider any strategy $\tilde{s}_\ell(\theta_\ell, \theta_{-\ell})$ in which candidate ℓ always chooses a specific campaign a_ℓ whenever possible. Then, while the sophisticated voter can rightly assume that a_ℓ is unavailable if candidate ℓ does *not* choose it, she may not necessarily be able to make any additional inferences if a_ℓ is chosen. Furthermore, if *both* candidates are using a_ℓ whenever possible, and both candidates campaign with a_ℓ, the sophisticated voter's utility updates will look like those of the naive voter.

So, define a^* as the campaign strategy (or set of strategies) that maximizes $d_\ell(a) = E_\mu[U_V(\ell) \mid (a)] - E_\mu[U_V(-\ell) \mid a]$ whenever $a_\ell = a_{-\ell}$ and voter beliefs μ are that candidates will choose a_ℓ whenever they can.

It seems logical that candidates would prefer to reveal the information, a^*, that is most useful to the voter. However, there are equilibria in the sophisticated voter game where candidates choose a campaign theme a_ℓ whenever they can, even though $a_\ell \neq a^*$. Following is an example of this:

EXAMPLE **4** *Candidates Ignore the Voter's Campaign Preferences*

Assume that, $p = \frac{3}{5}$, $q = \frac{2}{5}$, and $x = \frac{4}{5}$. Here, a^* is negative campaigning, meaning that all other things equal, the voter would be more likely to vote for a candidate that engages in negative campaigning. However, suppose that candidate strategies (and voter beliefs) dictate that issue bolstering will be chosen whenever possible. So, a moderate candidate will always reveal his own issue position – even if his opponent is of bad character. It is an equilibrium when candidates choose among strategies in the following order: issue bolstering (IB), negative campaigning (NC), positive campaigning (PC), issue differentiation (ID).[19]

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[19]Candidates here avoid choosing strategies that reveal harmful information about themselves or good information about their opponent. Assume that the for any harmful campaign, the voter assumes that candidate is $(\pm 1, -x)$ and his opponent is $(0, x)$.

For example, if a candidate uses positive campaigning, this means he is an extremist and his opponent is of good character.

Candidates using issue bolstering will have no incentive to deviate to negative campaigning. To see this, suppose that both candidates are $(0, -x)$ and that $a = (IB, IB)$. Voter beliefs are that $\ell = -\ell = (0, x(2p-1))$. If candidate ℓ switches so that $a = (NC, IB)$, voter beliefs are now that $\ell = (\pm 1, x(2p-1))$ and that $-\ell = (0, -x)$. Voter utility $U_V(\ell) = -0.84$ and $U_V(-\ell) = -0.8$, so the election favors $-\ell$. In general, issue bolstering raises voter utility by $2q$, while negative campaigning lowers voter utility for the opponent by $2px - (1 - 2q)$, because the sophisticated voter assumes from the lack of issue bolstering that ℓ is an extremist. So, this equilibrium requires that $2px < 1$.[20] However, if $p = 0.7$, now ℓ has incentive to switch to $a = (NC, IB)$ from $a = (IB, IB)$, because $U_V(\ell) = -0.68$ and $U_V(-\ell) = -0.8$, and the election favors ℓ. ∎

Although there can be many equilibria, I will now focus on the one in which candidates first try to campaign using a^*. This is useful not just because the candidates show more responsiveness to the voter, but also because the equilibrium I am about to characterize exists for all values of p, q, and x. First, define a^{**} as the campaign strategy *on the opposite dimension from a^** that maximizes $d_\ell(a) = E_\mu[U_V(\ell) \mid (a)] - E_\mu[U_V(-\ell) \mid a]$ whenever $a_\ell = a_{-\ell}$ and voter beliefs μ are that candidates will choose a_ℓ whenever they can.

PROPOSITION **4** *The following is always an equilibrium. Candidates use strategy a^* if a^* is available (i.e. does not reveal information harmful to the campaigner). If unable to use a^*, candidates choose a^{**}. If unable to choose either a^* or a^{**}, candidates maximize $d_\ell(a_\ell)$ as if the voter were naive. If any candidate uses a harmful strategy (i.e. reveals bad information about himself, or good information about the opponent), then he is assumed to be $(\pm 1, -x)$ and his opponent $(0, x)$.[21]*

The proof is in the appendix. ∎

The reason a^{**} must be on the opposite dimension from a^* is that once both candidates fail to choose a^*, the sophisticated voter gains perfect information on the dimension of a^*, so any revelation on that dimension is redundant. And if exactly one candidate chooses a^* (e.g. negative campaigning), then his opponent can't profitably choose the opposite strategy on that dimension (in this case, positive campaigning). Note that whenever neither candidate uses a^*, the voter will always get perfect information about the candidate types from the campaign revelations.

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[20]Otherwise, the proof of this equilibrium is analogous to that of Proposition 4 below.

[21] *The voter's strategy is $\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)) = (1, 0)$ for ℓ and $-\ell$, respectively, whenever $E_\mu U_V(\ell) > E_\mu U_V(-\ell)$. In the case where $E_\mu U_V(\ell) = E_\mu U_V(-\ell)$, $\tilde{\tau} = (\frac{1}{2}, \frac{1}{2})$.*

Again, unlike the other possible equilibria, the one from Proposition 4 always exists. In any other equilibrium, candidates and voters would have to agree in some cases to prefer a strategy other than a^*. Then, for some values of p, q, and x, the candidates will have incentives to defect as in Example 4.

In the Proposition 4 equilibrium, the existence of a sophisticated voter rarely changes the election outcome of the analogous naive voter case. One exception is that she chooses a weakly better candidate more often than the naive voter does. This happens only when the voter cares so strongly about one dimension that she prefers both types of information on that dimension. Following is an example.

EXAMPLE **5** *Campaign Strategy Dependent on Voter Sophistication*

Assume that candidate A is $(0, -x)$, candidate B is $(\pm 1, -x)$, $p = \frac{1}{4}$, $q = \frac{1}{3}$, and $x = 2$.

In other words, candidate A is a moderate with bad valence characteristics, and candidate B is an extremist with bad valence characteristics. But from the voter's perspective, each candidate is a good guy with probability $\frac{3}{4}$, bad with probability $\frac{1}{4}$, an extremist with probability $\frac{2}{3}$, and a moderate with probability $\frac{1}{3}$. And because $x = 2$, the voter cares twice as much about character relative to issues. Since negative campaigning maximizes $d_\ell(a)$, if the voter were naive, A would reveal $(C_B = -x)$, B would reveal $(C_A = -x)$, and the election would end in a tie. But what if the voter is sophisticated? Then, candidate A can profitably switch to issue bolstering $(I_A = 0)$, because his message of $(C_B = -x)$ is redundant. The sophisticated voter can infer $(C_B = -x)$ from B's failure to reveal $(C_B = x)$. Furthermore, B, who is an extremist facing a moderate, cannot profitably change to another campaign tactic. Thus candidate A, the weakly better candidate, will now win the election. Note that if candidate A reveals $(I_A = 0)$, he must be sure that the voter is sophisticated. With a naive voter, if A chooses issue bolstering, it ensures his defeat. ∎

Again, this situation only occurs if the two strategies that maximize $d_\ell(a)$ are on the same dimension. Otherwise, a weakly better candidate may still lose the election, and Examples 2 and 3 still apply. Thus eliminating negative campaigning still has an ambiguous effect on voter welfare.

In the sophisticated voter equilibrium, campaign strategy still depends upon the candidates' traits, the voter's predispositions, and the voter's preference between personal and political information. There will be more negative campaigning when voters care about valence issues, when voters assume *ex ante* that political candidates are good people, and when candidates have poor valence characteristics that can be exploited. Note that the latter of these three conditions is predicated on the assumption that candidates will have less success with misleading and false revelations relative to truthful ones. This point is taken up briefly in the final section.

5 Conclusion

First, I will review the questions posed at the outset. Who engages in negative campaigning? If negative campaigning is the ideal strategy, any rational candidate does so. Otherwise, it may be a strategy forced upon a candidate whose issue position or character does not meet voter standards. Of course, in this case, the candidate is likely to lose the election anyway.

When do candidates choose negative campaigning? Campaign choices depend upon three factors: the character and issue positions of the candidates, the predispositions of the voters, and the dimensions of political importance to the voters. These three variables should be the starting point of any empirical testing of this model. Negative campaigning will be more likely when the voters have positive initial opinions of the candidate's personal qualities and care strongly about the character traits of office seekers.

Candidates at the onset of a campaign will use these three variables to choose a strategic goal and a plan toward achieving that goal. It follows naturally from this model that candidates, who have already chosen the optimal campaign revelations, should have little incentive to alter campaign *strategies* throughout the course of a campaign. Instead, the candidates could change *tactics* to ensure that their original strategy is properly conveyed to the electorate.

When does negative campaigning matter? It can help a superior candidate to victory, but can also help an inferior candidate muddle the landscape. Again this depends on the voters. If they are especially interested in information about character, they are likely to see more negative campaigning. Interestingly, voters who generally have positive impressions of political candidates will also see more negative campaigning, which could frustrate the voters, as the information is dissonant with their general perception of politicians. Conversely, voters who generally view politicians as untrustworthy scoundrels will be less inundated with negative advertising, because these people would view the information as less surprising and so would not be much affected by it.

As mentioned in the previous section, a logical next step would be to repeat the same analysis while allowing candidates to misrepresent the true character and issue positions. While the model presented here assumes that candidates will tell the truth, this extension would explain how changes in the likelihood of getting caught lying would affect their campaign strategies.

Another potentially useful approach would be to introduce uncertainty regarding the median voter's ideal point, as in Wittman (2001). This would create yet another distinction between issue and character campaigning, because for a valence dimension, there is never uncertainty about the voter's preferences. She always prefers higher values.

The voter could also have preferences for candidates who offer a smaller degree of risk (i.e. discrepancies in the variance of the two candidates). For instance, an incumbent's variance

would usually be smaller than that of a previously unknown challenger, because of the voter's presumed knowledge of the incumbent's performance in office as well as information revealed about the incumbent during his previous successful campaign(s).[22]   Strategy differences may arise if voters are risk-averse and prefer a lower variance candidate to a higher variance candidate with the same expected value.

There are also several ways to add additional players to this model.   For instance, this model could provide an interesting beginning for considering endogenous candidate choice. There may be a marked effect on nomination choices of competing political parties given their knowledge of how the upcoming election will play out.   Also, what if there are independent parties (such as "Swift Boat Veterans for Truth" and other 527 groups) that have the ability to launch advertisements?   What if the independent monitors are strategic, and generally favor one party or candidate over the other?   Allowing these possibilities could be especially relevant for elections where the players can reveal misinformation.

In order to answer the important questions about negative campaigning, I have provided a campaign strategy framework that clarifies the meaning of negative campaigning, and a campaign strategy game where candidates choose from positive campaigning, negative campaigning, issue bolstering, and issue differentiation.   By providing this foundation, this study may serve as the starting point for more fruitful research on how candidates choose campaign strategies and on how those strategies affect voter opinion and election results.

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[22]The setup of this model is in the appendix.

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6 Appendix

6.1 Voter Expected Utility

The voter's expected utility for each candidate, $U_V(\ell)$, is originally $-2q + x(2p - 1)$. If the voter is naive, calculating $d_\ell(a \mid \theta_\ell, \theta_{-\ell})$ just requires recording changes in the voter's expected utility.

Issue Differentiation (revealing $(I_{-\ell} = 1)$ or $(I_{-\ell} = -1)$) lowers $U_V(-\ell)$ by $1 - 2q$.

Issue Bolstering (revealing $(I_\ell = 0)$) increases $U_V(\ell)$ by $2q$. Thus Q, the greater of $2q$ and $(1 - 2q)$, determines (independent of candidate types) which issue strategy has the largest potential upside.

Negative Campaigning (revealing $(C_{-\ell} = -x)$) decreases $U_V(-\ell)$ by $2xp$.

Positive Campaigning (revealing $(C_\ell = x)$) increases $U_V(\ell)$ by $2x(1 - p)$.

Thus P, the greater of p and $(1 - p)$, determines (independent of candidate types) which character strategy has the largest potential upside. If the expected values of each candidate change, it doesn't change strategy – just the likelihood of winning. For example, suppose candidate A may be either x_1 or x_2, where $x_1 + x_2 \neq 0$. This change can be transformed about zero by focusing on the difference between the two values. Thus, assuming that $x_1 > x_2$,

Type	Probability
x_1	p
x_2	$1 - p$

can be transformed into

Type	Probability
$\frac{x_1 + x_2}{x_2} + \frac{x_1 - x_2}{x_2}$	p
$\frac{x_1 + x_2}{x_2} - \frac{x_1 - x_2}{x_2}$	$1 - p$

The transformed utility function has a constant portion $\frac{x_1 + x_2}{x_2}$ and a variable portion that depends on the random draw. The utility from electing candidate A would then be $-2q + \frac{x_1 + x_2}{x_2} + \frac{x_1 - x_2}{x_2}(2p - 1)$. Then, letting $\frac{x_1 - x_2}{x_2} = x_A$, campaign strategies could be carried out just as in the original (good or bad character) scenario, because the constant term will have no effect on the strategies; it will just increase the incumbent's likelihood of winning. This same type of adjustment works on the issue dimension once it is simplified into two components: extremist $(I_\ell = \pm 1)$ or not extremist $(I_\ell = 0)$.

6.2 Proof of Proposition 4:

First, I show that a candidate using a^* has no incentive to deviate. Suppose that the opponent $-\ell$ is using a^*, and that using a^* changes voter utility by v. For all other themes $a' \neq a^*$, $\max d_\ell(a'_\ell, a^*) = w < v$, because v maximizes $d_\ell(a)$ and because choosing $a' \neq a^*$ reduces d_ℓ further by some non-negative amount due to the inference that ℓ didn't choose a^*. So, candidate ℓ does best by choosing a^*. Now suppose that the opponent $-\ell$ is

using $a_{-\ell} \neq a^*$. By the same logic a^* will do best unless it reveals redundant information. It will only be redundant if the opponent reveals good information about ℓ. But in this case, the voter will believe that $-\ell$ had no better alternative and conclude that $\ell = (0, x)$ and $-\ell = (\pm 1, -x)$. But then for all action choices $d_\ell(a) = 0$, so ℓ has no incentive to deviate from choosing a^*.

Next, I show that candidates unable to use a^* will have no incentive to deviate. Suppose that the opponent is using a^*, but for candidate ℓ, using a^* would be harmful. Let $d_\ell(a^{**}, a^*) = w'$. For all other themes $a' \notin \{a^*, a^{**}\}$, $\max d_\ell(a'_\ell, a^*) = w'' < w'$, because w' maximizes $d_\ell(a)$ on the dimension of a^{**} and because choosing $a' \neq a^{**}$ reduces d_ℓ further by some non-negative amount due to the inference that ℓ didn't choose a^{**}. Note that all revelations on the dimension of a^* will be harmful to the campaigner, and hence the voter will believe he is $(\pm 1, -x)$ and his opponent $(0, x)$.

Finally, if both candidates are unable to use a^*, the voter will believe she has full information, so no change in campaign strategy will impact the probability of winning.

The voter's strategy is $\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta)) = (1, 0)$, for ℓ and $-\ell$, respectively, whenever $E_\mu U_V(\ell) > E_\mu U_V(-\ell)$, because always voting for ℓ in this case maximizes her expected utility $E_\mu U_V(\tilde{s}, \tau)$. In the case where $E_\mu U_V(\ell) = E_\mu U_V(-\ell)$, $\tilde{\tau} = (\frac{1}{2}, \frac{1}{2})$ is weakly dominant because all strategies $\tilde{\tau}(s_\ell, \tilde{s}_{-\ell}(\theta))$ give the same expected payoff. ∎

6.3 Modeling Incumbency

The general model can easily be modified to capture the effects of incumbency, where the incumbent has a smaller range of possible values on each dimension. The type of Candidate A (Incumbent), $\theta_A = (I_A, C_A)$, is drawn independently from $\Theta = [\{-y_A, 0, y_A\} \times \{x_A, -x_A\}]$

with the probability p_A that a candidate has good personal qualities (x_A), and the probability $1 - p_A$ that he has undesirable character traits $(-x_A)$. Furthermore, A has the probability $1 - 2q_A$ of being a centrist, and probability q_A of favoring each extreme. The type of Candidate B (Challenger), $\theta_B = (I_B, C_B)$, is drawn independently from $\Theta = [\{-y_B, 0, y_B\} \times \{x_B, -x_B\}]$

with the probability p_B that a candidate has good personal qualities (x_B), and the probability $1 - p_B$ that he has undesirable character traits $(-x_B)$, where $x_A < x_B$. Furthermore, B has the probability $1 - 2q_B$ of being a centrist, and probability q_B of favoring each extreme, where $0 < y_A < y_B \leq 1$.

Before the campaign stage, the voter's expected utility from electing candidate ℓ is $-2q_\ell y_\ell - f(y_\ell) + x_\ell(2p_\ell - 1) - f(x_\ell)$, where $f()$ is some function of the range between the possible realizations of candidate locations.