

The Psychology of Institutional Development: How Parties' Willingness to Accept Risk  
Affects the Districts they Draw and the Seats they Win

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## Abstract of Dissertation

### The Psychology of Institutional Development: How Parties' Willingness to Accept Risk Affects the Districts they Draw and the Seats they Win

The institutional development literature has focused a great deal of effort on offering explanations for institutional change and stability. It has spent less time attempting to explain how institutional actors choose the goal(s) they seek when change occurs.

While understanding the causes of change and stability is undoubtedly important, developing a theoretical and methodological approach to analyzing goal formation will go a long way in helping to provide a more complete understanding of the results of change. In this work, I build upon cognitive psychology's prospect theory, which provides a theoretical understanding of how individuals behave under conditions of risk. I then apply this to party behavior during congressional redistricting.

The problem with prospect theory for applied scholars is that its many different effects and predictions have been demonstrated in isolation. The real world is more complex than the experimenter's laboratory. Prospect theory provides little guidance on how its various effects interact or conflict when multiple of these effects are present in the complex choice sets faced by actors. Thus, I have designed and implemented experiments tailored to the redistricting context in order to determine what happens when individuals are faced with risky choices that also contain a loss component.

The results of the experiments provide clear behavioral predictions for parties managing the redistricting process. As such, I gather observational data from the last three

redistricting cycles to explain how parties choose between their competing goals of protecting their incumbents and maximizing their seats. I operationalize this choice in the form of a variable measuring how parties alter the average competitiveness of the state's congressional districts. I find that parties' willingness to accept risk and increase competitiveness is affected by how they perceive their own strength and options.

Finally, I determine the substantive importance of changes to district competitiveness on seat gains or losses in the short term (the first election after redistricting) and long term (the last election of the redistricting cycle). Utilizing two choice models predicting seat gains, losses, or maintenance of the status quo, I find that changes to competitiveness is one of only two variables having both a short and long term influence on seat change.

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## Chapter 1: The Psychology of Institutional Development

In March of 1917 President Wilson called the Senate into special session two days after the official close of the 64<sup>th</sup> Congress. During that session the Senate ended more than a century of its tradition of free debate. It adopted new cloture rules that, upon the agreement of two-thirds of the Senators present, placed a time limit on debate and restricted the ability of Senators to use delaying tactics. This was a watershed moment in the development of Senate institutions. But why did it happen when it did, rather than sooner, later, or not at all? Additionally, why did they choose a cloture rule requiring two-thirds of Senators present, rather than three-fourths or simply half?

Scholars of institutional development, regardless of topic, face the task of explaining three separate yet overlapping concepts, (1) the causes of stability, (2) the causes of change, and (3) the reason the change took the form it did rather than some other. The first two of these concepts are often viewed together. For instance, Pierson (2004) addresses them by saying, “[c]hange and stability are two sides of the same coin. The successful generation of grievances against particular institutional arrangements must be understood as partly a breakdown in the factors reinforcing the status quo. An adequate theory of institutional development must pay sustained attention to the issue of institutional resilience” (141-142).

Scholarly attempts to account for one or both of these concepts abound. For example, the concept of punctuated equilibrium has been utilized to explain how

seemingly stable policies reach an end point (punctuation) and shift to a new equilibrium (Jones et al. 2003; True et al.1999). Binder and Smith (1998) demonstrate that Senators' short-term concerns about their own political interests have been the backbone for stability in Senate rules regarding debate and the catalyst for change. Cortell and Peterson (1999) offer an explanation for both incremental and large institutional changes that points to international and domestic events that open windows of opportunity for officials who, depending on their particular political context, may or may not be able to take advantage of them.

Of course, understanding the causes of stability and change is important but explaining why change took the shape it ultimately did is critical because the product of change becomes the new equilibrium after punctuation or the new path of any path dependent process. While the outcome of change is always present in analyses, how actors choose the particular goal to pursue is rarely the focus of systematic study. That is, one might explain partisan rule changes in the House as a function of the distance between the median member of each of the parties and the floor median (Schickler 2000), but why any particular change occurred and not another is left unexplored. Peters et al. (2005) point to this particular problem with many works relying on concepts such as critical junctures or sequences (Collier and Collier 1991). They state, "[t]he argument is that at the formative period of a policy a critical juncture of forces and processes produces a particular outcome. The authors using this form of analysis present careful arguments for the logic of the outcomes given the particular conjuncture of events, but there is perhaps inadequate treatment of counterfactuals and conscious

choice. In other words, how inevitable was the selection of the particular paths and what political choices might have produced different outcomes” (1238)?

In their work, Jones et al. (2003) use the metaphor of geophysics and earthquakes stating that, “[g]eophysicists do not observe the friction plates directly. Instead, they measure the outputs from the process (the earthquakes) and study their frequency distribution” (152). Thus, the specifics of any particular change are not the focus of the analysis, while the general causes of change are. How participants choose the goal(s) that they pursue is not explored. Greif and Laitin (2004) are focused on three classic institutional development questions: “Why and how do institutions change? How do institutions persist in a changing environment? And how do processes that they unleash lead to their own demise” (633)? The question they do not ask is: How do the participants in institutional change processes choose their goals? Greif and Laitin go into great detail describing the process of change and the specific outcomes of change. However, the choice of which particular change to pursue is largely left as no choice at all for the participants, but as the inevitable outcome of the complex process.

Aldrich and Rohde (2000) provide another example of excellent work that explains a catalyst for change, but does not explore why the specific changes that occurred were chosen. To be sure, they provide an in-depth analysis of the changes engendered by the Republican Party during the 104<sup>th</sup> Congress relating to the Appropriations Committee. Their goal is to find support for the theory of conditional party government, which is accomplished. Republican party leaders were given the ability to make substantial rules changes to help push through their policy agenda.

However, their analysis lacks a systematic exploration of why party leaders chose to implement the specific rules changes they did rather than others, beyond reference to constraints on actors external to themselves.

The reference by scholars, such as Aldrich and Rohde, to the institutional constraints (Shepsle 1979) placed on individuals is not being challenged here. The actions of party leaders in the House, for example, are surely constrained by other institutional sources of power such as committees. But too often these institutionalized constraints are presented in such a fashion as to suggest that the individual or group being constrained is left with just one option. This, I argue, is the case with works like Aldrich and Rohde and Grief and Laitin. Aldrich and Rohde make a powerful argument for conditional party government, which provides for both the breakdown in past stability and opportunity for change in House rules. This constitutes an explanation for the first two parts of the institutional development narrative. However, how the Republicans ended up with the specific set of changes they did appears to be more description than explanation. That is, there does not seem to be any way for their account to be false.

I argue that there is a need for a more systematic approach to goal formation in the institutional development literature. While the goals each actor begins with may be modified as the process unfolds, it is these original goals that set the parameters of debate. For instance, how much or how little a new cloture rule infringes on minority rights in the Senate depends as much on where the debate begins as where it ends. The 1787 Constitutional Convention was originally planned as an effort to reform the

Articles of Confederation, yet the terms of debate were radically altered by Madison and his supporters whose goal was to scrap the Articles and begin anew. Determining how Madison set upon this goal rather than incremental reform is critical to an understanding of what the Constitutional Convention produced. Ultimately, new institutional structures are the product of a combination of the goals players choose to pursue and the political context they find themselves in.

While the study of institutional stability and change has produced broad theories such as critical junctures and punctuated equilibrium, goal formation may appear more idiosyncratic. This perceived lack of generalizability may account for why the causes of change and stability have been more thoroughly explored than the choice of goals to pursue during times of change. This does not have to be the case. The choice of goals, or preference order formation, can be studied systematically. What is required is a new approach to the problem. That approach, I argue, can be found in psychology. The understanding of human behavior found in cognitive and political psychology is uniquely suited to the task of analyzing how participants in the institutional development process form preferences.

Work in political psychology highlights the important relationship between psychology and politics and has had its greatest influence on studies of mass political behavior. This relationship is overlooked far too often when studying elite political behavior. Political psychology's earliest practitioners began with a conception of this relationship as unidirectional and tended to follow the works of Harold Lasswell. Lasswell (1930) conceived of political man as the result of private variables (i.e. the

psychology of the individual) transformed into public objects and rationalized in terms of the public interest.<sup>1</sup> This one-way street of causation, however, has changed considerably since Lasswell's time. In fact, work in this sub-field can more accurately be said to follow one of Lasswell's contemporaries, Kurt Lewin. In *Principles of Topological Psychology*, Lewin states his now classic formulation of this important relationship: "Every psychological event depends upon the state of the person and at the same time the state of the environment, although their relative importance is different in different cases" (1936; cited in Krosnick and McGraw 2002, p. 91).

Lewin presents a simple model of this relationship, Behavior =  $f$ (Person, Environment). This formulation has become the starting point, explicitly or implicitly, for much contemporary political psychology, and the current study is no different. As Ward (2002) put it, "Political psychology is no longer unidirectional, but bidirectional. Psyche influences political behavior, and the polity impacts psyche" (75). As an approach to the study of institutional development and goal formation, the bidirectional nature of political psychology is a large part of its appeal. There is no need to assume away the person, as in contemporary rational choice work, or the environment, as in much of the past work in the behaviorist tradition. It is the interaction of these two that produces the political behavior we observe and thus it is this interaction that becomes the central focus of this study.

Kahneman and Tversky's (1979) prospect theory is particularly applicable to the institutional development process. Prospect theory encompasses a wide variety of

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<sup>1</sup> Lasswell more formally defined it as  $p \} d \} r = P$

concepts, but I rely on two in particular. First, prospect theory offers an understanding of an individual's propensity to accept or avoid risk. It points to the importance of reference points in determining people's domain. Domain is critical because it leads directly to risk accepting (domain of losses) or risk averse (domain of gains) behavior. The second concept from prospect theory is loss aversion. Kahneman and Tversky (1991) have demonstrated that losses and disadvantages play a larger role in determining choice than gains and advantages. Prospect theory, therefore, can allow one to focus directly on the goal formation stage of the game because it offers general predictions about how people evaluate their options.

Another of political psychology's appealing characteristics is its ability to accommodate or, more precisely, incorporate diverse perspectives and methodologies. Traditionally, the study of institutional development has followed one of three approaches: (1) rational choice, (2) sociological, or (3) historical. These approaches have gone a long way in providing scholars with a framework within which to conduct their research. By adopting one, scholars immediately know where to focus their attention, i.e. the individual level of rational choice rather than the group or cultural level of sociology; or an acute focus on the importance of the historical context rather than the search for generalities across time and circumstance. In a very important way, these approaches have streamlined the process of conducting research for scholars by helping to structure their inquiry and eliminate through simplifying assumptions the need to deal with one or the other of Lewin's two functions (i.e. the person or the environment).

With a political psychological approach one need not assume away the person or the environment and, more importantly, can work with all three of these traditional approaches in producing a fuller understanding of the process of institutional development. Political psychology can do this, first, by remaining at the individual level. But rather than adopting the dubious assumption of rationality, it relies on a more thorough understanding of human cognition present in social psychological work. Second, this understanding is predicated on the study of how individuals perceive their environment. Therefore, how individuals relate to and are influenced by the cultural setting and historical context are incorporated as contributing variables. In the following sections, I explore the relationship between each of the traditional approaches to institutional development in relation to political psychology.

### *Rational Choice*

The emergence of rational choice institutionalism, as told by Hall and Taylor (1996), is seemingly one of unintended consequences. It begins with a study of economic competition and ends with a dilemma. In 1929 Hotelling elucidated a theory of stability in economic competition brought about by the spatial location of competitors. Black (1958), applying this same spatial logic to political settings, later produced the median voter theorem, which argues for the possibility of finding a unique equilibrium in one-dimensional voting space based solely on preferences. In the meantime, Arrow (1952) presented his impossibility theorem, which, by showing the possibility of majority cycling, laid waste to the promise of finding stability based solely

on preferences. The problem of majority cycling and instability in general is exacerbated when we move to two-dimensional space, where McKelvey's (1976) work made finding a core of stable equilibria even more remote. This line of work, then, set the table for one of rational choice's great puzzles. If we expect so much instability in theory, why do we observe so much stability in practice?

The answer comes from Shepsle's (1979) structure-induced equilibrium. Here the idea is that the institutional structure or rules of the game place constraints on how and when proposals can be made and thus lead to stable outcomes. In the words of Krehbiel (1987), this boils down to three ingredients: "...the *preferences* of decision makers for various policies; the *institutional features* that specify when, how, and by whom decisions are made; and the *strategies* decision makers employ within the confines of institutional features in their attempts to obtain preferred outcomes" (377). A large literature dedicated to refining our understanding of how the structure of Congress induces behavior within that institution has developed, but the study of how institutions themselves change branched out from works such as that of Riker's (1980), who pointed to the endogenous nature of the rules of the game. That is, the rules can be changed by the same individuals who are supposedly being constrained by them in the structure-induced equilibrium account. This particular insight has not caused a great problem for rational choice institutionalists interested in understanding behavior within a particular setting, but it has produced considerable work aimed at understanding how the rules themselves change.

Knight (1995) begins his review of rational choice theories of institutional emergence and change by noting that although these theories take many forms, “[t]hey all share an initial premise that social actors pursue some set of preferences in a rational way. This means that social actors seek to achieve their most-preferred outcome in the least costly manner....[M]ost rational-choice accounts of institutional emergence and change employ some model involving a game with multiple equilibria. Related to each equilibrium is an institution (a rule of action) that would, if selected, resolve the strategic problem inherent in a situation in which there are a number of ways of doing something and the task is to establish a common way of doing it. To solve these games, we must invoke a mechanism (either a refinement of the assumption of rational decision making or some feature of the social context) to explain why the actors arrive at one of these equilibria and thus institutionalize a particular rule of action.” (95-96).

These theories rely heavily on an economic understanding of human behavior, especially Williamson’s (1975) transaction cost analysis (see also the influential works within political science of Moe 1984, and Weingast and Marshall 1988). Studies in this vein attempting to explain specific institutional changes such as the emergence of standing committees in the House and Senate (Gamm and Shepsle 1989), the emergence of committee property rights (Jenkins 1998), or the shift from a bureaucracy

based in patronage to one based on service (Kernell and McDonald 1999), have tended to follow the same basic form: they look for an interest served by a change ex-post and then explain the change in terms of that interest ex-ante. Thus, goal formation is posited, not explained.

Critics of the rational choice framework point to its limitations. But it is not just scholars working outside of the rational choice program who recognize these limitations. North (2005), while unwilling to say that the rationality assumption is wrong, admits that "...it does not provide us with a guide to understanding the choices humans make in a variety of crucial contexts that are fundamental to the process of change...in addition, the rationality assumption fails to deal adequately with the relationship of the mind to the environment" (24). And in their recent steps toward reconstructing rational choice theory, Frohlich and Oppenheimer (2006) state bluntly that "the behavioral assumptions upon which Public Choice, and Game Theory are built, are false" (235). The common thread running through these acknowledgments is simply that individual cognition and the environmental context are not easily separated.

As Ferejohn (2006) states, the rational choice approach "...neatly separates two questions, asking, first, what are the effects of an institution (which treats the institution itself as exogenous to the choices made by agents operating within it) and, second, what explains the design of the institution itself (which rests on the notion that institutions themselves are endogenous)? ... [P]references are assumed to be separable from situation of choice so that actors may anticipate accurately how they will behave once institutions are put into place, for any set of institutions that may be designed (80-81)."

Like North, Ferejohn is unwilling to abandon the assumption, but admits that “...as strong causal statements, they are very likely to be wrong” (88). This problematic assumption becomes important in a psychological understanding of institutional development, as shifts in preferences induced by the historical procession of time become the catalysts for change.

Other criticisms—and there are many—of the rational choice approach are typified by the work of Pierson (2004). He refers to much of rational choice work as actor-centered functionalism, meaning that particular rules of action exist in order to serve the needs of those who created them. He identifies six limitations to this kind of research. First, because institutions usually have multiple effects, it is not credible to identify a particular effect and argue backwards to claim that one of these was the cause of the institution. Second, designers may not act instrumentally; that is they may choose to do what they perceive to be appropriate rather than what will maximize their personal gain. Third, the actors’ time horizon should be treated as a variable. If actors have short time horizons, then the long-term effects of an institution cannot be said to be the result of functionalist planning. Fourth, the effects of an institution may be unanticipated, i.e. functionalist explanations are limited because people make mistakes. Fifth, institutions continue, but the environment changes. In such cases, long-run but slow moving processes can see individual political elites left behind. And sixth, institutions continue, but the actors themselves change. Who are the inheritors and do they have the same preferences as those who put the institutions in place? As a result, Pierson argues that

“...functionalist explanations of institutions may be *partial*, focusing only on a few of the relevant mechanisms generating stability or change in institutions. They may be *nested*, in the sense that their claims are likely to operate only under circumstances that must be established through reference to arguments outside the scope of the theory. In many instances they may simply be wrong. Too often, the argument boils down to something like this: ‘We know that institutions constitute equilibria. We have propositions that show how such equilibria might be generated. Therefore these propositions *explain* the equilibria that in fact emerge’” (121-122).

Knight and Pierson agree on the very important point that it is often necessary for rational choice to “invoke a mechanism” outside the theory. This suggests a fundamental limitation of rational choice institutionalism—the rationality assumption itself. For the most part, the rationality assumption allows for a wide variety of opinions, beliefs, or preferences, as it is not the content of one’s preference ordering that matters, but that one follows the basic rules of logic and probability when attempting to maximize one’s utility. Herbert Simon (1957) is generally credited as the first to question the omniscient calculator assumption, arguing that human cognition is limited. Simon’s concept of bounded rationality has found much success despite some scholars’ protestations that it is too vague and gives little guidance as to where the boundaries are located (Lupia, McCubbins, and Popkin 2000). Richard Lau (2003) places

the boundaries of human rationality firmly in two places: limits on processing information and limits on the retrieval of information. Early psychological work on information processing suggests that humans are capable of handling only  $7 \pm 2$  bits of information at a time (Miller 1956). Information retrieval is even more complex. If a piece of information is moved to long-term memory, retrieval largely depends on one's pre-existing memory structure, how the information was originally encoded, and how often or recently this information has been accessed or how often or recently one has been exposed to the same stimulus (Smith 1998).

This line of work points to the central importance of a concept like priming. Scholars find time and time again that an individual's "preferences" are pliable. That is, what they happen to be thinking about at the time has a large effect on what they believe to be important (Iyengar and Kinder 1987). In fact, there is considerable evidence that political campaigns contested by parties and candidates are simply trying to prime the issues most favorable to them (Jacobs and Shapiro 1994; Petrocik 1996). The implication is that an assumption of rationality does not provide scholars with as much leverage on behavior as commonly thought. Even if preferences themselves are not changing, preference orderings certainly are. Fluid preference orderings leave rational choice scholars in a difficult situation. Defining how preferences are formed or how preference orderings come to be is beyond the scope of rational choice theory. Fortunately, this is where political psychology excels. As Crenshaw (2002) succinctly states, "[o]ne major intellectual contribution of political psychology is explaining how

preferences or interests are formed, how they are ranked, the intensity with which they are held, and how they are implemented” (141).

It is with this in mind that I apply psychologically based theory to institutional development. The move from studies such as those on priming to institutional development is not a small one, however. The focus of attention shifts from the general public to the behavior of elites. For some, this move reestablishes the value of rational choice because political elites have the expertise and motivation to behave in a rational manner. This last stand for rational choice, however, again fails to find support in psychological work. Camerer and Hogarth’s (1999) review of 74 studies focused on the manipulation of monetary incentives found that despite increased incentives, participants continued to exhibit inconsistencies such as preference reversals and framing effects. Experimental work on other types of incentives, such as the need to justify one’s behavior, also finds that framing effects persist (Miller and Fagley 1991; Takemura 1993). Expertise, as a cause of rational behavior, also fails to produce behavior consistent with rational choice assumptions (Bastardi and Shafir 1998; Camerer et al. 1997; Redelmeier and Shafir 1995; Tversky and Simonson 1993). For example, McNeil et al. (1982) found that physicians, medical students, and patients were all similarly affected by the framing of alternative therapies. As a result, Shafir and LaBoeuf (2002) conclude that “it appears that experts, for whom the tasks are meaningful and relevant, are as likely as nonexperts to violate simple norms of rationality. This strongly suggests that such violations cannot be attributed to lack of

interest, involvement, or understanding” (502). There is no reason to assume that political elites are any more rational than anyone else.

That being said, perhaps the greatest value of the rational choice program has been its focus on the individual. Individuals make choices to do  $x$  rather than  $y$ . Even choosing to do nothing is making a choice. What we want to understand is why individual  $a$  chose  $x$ . It is the accumulation of individual choices that generate aggregate outcomes. Thus, knowing why individual  $a$  chose  $x$  is important. Rational choice has had the simplest way of determining why individual  $a$  chose  $x$ . That is, it simply assumes that individual  $a$  chose  $x$  because  $x$  was his or her most preferred option. Knowing why  $x$  is individual  $a$ 's most preferred option is beyond rational choice. It is not, however, beyond psychology. In fact, Hermann (2002) views political psychology as the perfect complement to rational choice work: “Instead of assuming certain preference orderings and making preference formation exogenous to modeling political behavior, ... the political psychology perspective has as a major focus ascertaining where preferences come from and the ways in which individuals resolve the conflicts among values that determine preference orderings. What political psychologists seek to understand becomes the input for the behavior political economists wish to model” (48). Therefore, a psychological account of institutional development operates at the individual level and attempts to explain why individual  $a$  chose option  $x$  rather than any other. In order to understand choice, it is not enough to understand the preference orderings. One must also understand where the choice set comes from. Typically, rational choice accounts have treated preference orderings and the available choice set as two separate

phenomena. But it is more likely that they are connected in some important ways through the operation of historical and cultural processes influencing not only the preferences an individual has, but also the choices he or she believes are available.

### *Historical Institutionalism*

Historical institutionalists view institutions as doing more than channeling ambition and strategic choices, as in the rational choice account. They argue that institutional contexts generate the very interests and objectives pursued by actors and are inseparable from them. As one might expect, historical context and process are prominent features of this variant of institutional scholarship. Thelen (1999) draws a clear line between rational choice and historical institutionalism: “Whereas rational choice theorists tend to view institutions in terms of their coordinating functions, historical institutionalists see institutions as the legacy of concrete historical processes” (382). From this point of view, one cannot understand how a particular institutional structure was formed without a detailed understanding of the historical context that produced it. This leads to questions about sequence and timing becoming the focus of these types of analyses.

Another primary feature of historical institutional analysis is how it handles change. Much of this analysis focuses on the interaction of different institutions and their effects on one another. That is, “change along one time line affects order along the others” (Orren and Skowronek 1994: 321), with institutional orders moving through time and often clashing. An example of this is Pierson’s (1996) conception of gaps and

lags in policy formation that lead to institutional evolution wholly unintended by the original designers. In this way the dynamic nature of politics is brought into full relief. Criticizing both rational choice and sociological institutionalism, Thelen argues that “perspectives that conceive of change as the breakdown of one equilibrium and its replacement with another do not capture [the dynamic nature of politics] well. Nor, however, do alternative conceptions, for example, some early versions of the new institutionalism in sociology in which the definition of institutions as ‘shared cultural scripts,’ obscures political struggles among competing scripts and/or change as the displacement of one script by another” (384). Rational choice institutionalism has a difficult time dealing with change because, by definition, it is searching for equilibria. The catalyst for change is generally an exogenous event. That is, in order to account for change, one must look outside the theory. For the historical institutionalist, change is expected as multiple institutional orders clash (Orren and Skowronek 2004).

It can be difficult to criticize historical institutional work. The inductive, real-world, problem-driven approach to scholarship produces high-quality answers. However, when work is done in this inductive fashion and the scholar is free to adopt and adapt methods and explanations in a dynamic fashion, one begins to wonder where the theory has gone. For example, in attempting to demonstrate how historical institutionalism goes about building theory Thelen writes:

“Very frequently, historical institutionalists begin with empirical puzzles that emerge from observed events or comparisons: Why did the policies of the advanced industrial countries differ so much in response to the oil

shock of 1973? ... Why do some countries tax and spend more than others? ... The analyst then uses the comparisons to test hypotheses that can account for the observed differences. Rational choice theorists often proceed somewhat differently, deriving their puzzles from situations in which observed behavior appears to deviate from what the general theory predicts" (373-374).

Rational choice work is often criticized for its reliance on the tautology referred to as "revealed preferences." That is, preferences are used to explain behavior and behavior is used to explain preferences. One cannot help but begin to think that historical institutionalism is guilty of a similar transgression when it comes to hypothesis generation. That is, the hypotheses are used to explain the puzzle and the puzzle is used to generate the hypotheses. Are they building a theory, or simply explaining what happened using the classic historical method?

One of rational choice's greatest strengths is its concern for theory. As Fiorina (1995) puts it, most rational choice "...scholars are not as interested in comprehensive understanding of some real institution or historical phenomenon, so much as in a deeper understanding of some theoretical principle or logic that might be operating in the specific institutional and/or historical context" (110). Thus, to a very real extent, the goals of historical and rational choice institutionalists are quite different. In addition, the lack of a true micro-foundation for their work undermines historical institutionalists' attempts at theory building. They do not explicitly subscribe to rational choice theory,

but they may use it. The same can be said of cultural explanations borrowed from sociological accounts. Historical institutionalists' willingness to utilize the theory that fits helps it to explain specific events and perhaps is its greatest strength. But it can leave one feeling that these accounts are a series of "just so" explanations of what occurred, no different than one might find in quality historical analysis.

What happens in historical institutional analysis when multiple theoretical explanations seem to account for the same phenomena? One of the valuable traits of a deductive theory like rational choice's is that it provides a base from which to judge. For example, Rogers Smith (2006) recently provides a synopsis of his career studying race in America in relation to ideational accounts of institutional development versus materialist accounts. In his early years, his study led him to conclude that formal institutional definitions of race led directly to how individuals and groups within society thought about and defined race. His more recent works, however, have begun to lead him to the opposite conclusion; that the multiple and often conflicting ideas of race within society combine to produce the formal institutional definitions. This seems to be an important difference and one worthy of considerable study. But historical institutionalism lacks a true base from which to judge this debate. If there were a deductive individual-level theory available, one could turn to it as a guide, asking such questions as: How do we expect individuals to behave? How do individuals develop perceptions about race? How do individuals pursue the institutionalization of these perceptions? But, historical institutionalism is neither deductive nor based in the micro-foundations of individual behavior. In fact, Orren and Skowronek (2004) characterize

the genesis of the historical approach as a skeptical reaction to rational choice's universalistic aspirations. Thus, the lack of individual-level analysis in historical institutionalism is understandable. However, it is not a return to rational choice's assumptions that is being advocated here. It is a turn to a more elaborate (and more accurate) understanding of human perceptions and motivations based in social psychology. It is this work, not that of economics, that is uniquely qualified as a basis from which to produce micro-level theory.

The important contribution made by historical institutionalism to a psychological understanding of institutional development is its emphasis on process. Time passing is, essentially, the change mechanism. Individual perceptions change as they move through time. This does not necessarily have to be due to an exogenous event. Take, for example, one of game theory's extensive form game trees. The game works and equilibria are found by identifying preference orderings through the establishment of payoffs for each choice branch. There could be 2, 4 or 100 choice nodes, but what is important is that, in the real world, the process being modeled takes place over time. The players may very well have the preference ordering assigned to them at the beginning of the game, but simply by reaching a terminal node (i.e. the end of the game), the player's perceptions will change. That is, once the payoffs have been distributed and a new status quo is established, an endowment effect occurs and the players' propensity to accept risk changes. Thus, the equilibrium that was thought to have been established based on the pre-game set of preference orderings may not (or will not) hold with the new post-game set of preference orderings.

This returns us to Ferejohn's separability problem. If we are to understand the process of institutional development, preferences about outcomes are inseparable from the institutional context within which the choice is being made. This has long been the argument of historical and sociological institutionalists. One way to avoid the separability problem altogether is simply not to conduct analysis at the individual level. Most historical and sociological work does just this by focusing on the group or state. However, this move does not alter the fact that individuals are the ones making choices, not groups or states. Anthropomorphizing these groups does not change this, for there still needs to be an explanation of why individual  $\alpha$  chose  $x$ . Even if the explanation is as simple as sociology's (i.e. that cultural influences obscure individuals to the point that they are no longer interesting points of focus), the micro-level explanation for behavior ought to be there. In the psychological approach to institutional development, individual choices and behaviors are sufficiently varied as to provide an interesting focus of analysis. That is, the incorporation of social psychological understandings of individual perception provides the grist for this mill, which allows for one to remain at the individual level of analysis, unlike sociological and historical works.

### *Sociological Institutionalism*

The dominant paradigm in the sociological approach to institutions is outlined by March and Olsen (2006):

“Institutions give order to social relations, reduce flexibility and variability in behavior, and restrict the possibilities of a one-sided pursuit

of self-interest or drives. The basic logic of action is rule following – prescriptions based on a logic of appropriateness and a sense of rights and obligations derived from an identity and membership in a political community and the ethos, practices and expectations of its institutions. Rules are followed because they are seen as natural, rightful, expected, and legitimate. Members of an institution are expected to obey, and be the guardians of, its constitutive principles and standards” (6).

This line of thought is similar to that of the historical institutionalist approach. That is, separating the individual from the institution is difficult at best. But what is perhaps most important is the line that March and Olsen draw between what they call the logic of appropriateness and the logic of consequence, where individuals make choices based on their expectations about the consequences in relations to their current goals (Olsen 2001). This demarcates the territory of sociology’s and rational choice’s influence on institutional understanding. March and Olsen are pointing out that so much of individual behavior essentially occurs due to unconscious thought processes<sup>2</sup> that simply prescribe for the person the appropriate course of action. This, I think, is a very important point. The entire rational choice approach is predicated on conscious deliberation. Even the most recent works that recognize the boundedly rational nature of individual cognitive capacity rely on the idea that individuals are consciously making a choice. But in the March and Olsen account, most of the time there may be no

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<sup>2</sup> To my knowledge, March and Olsen do not discuss it in this manner or use this terminology, but it does seem appropriate.

deliberation at all. There is no choice to be made and people simply do what they are supposed to do. The rational choice assumption that individuals have a set of choices always before them misses much of what March and Olsen are arguing. That is, if one believes the current set of rules are “natural, rightful, expected, and legitimate,” then the choice not to follow them would not even occur to them, i.e. it would not be in the choice set. So the question becomes: How does the choice to deviate from prescribed norms make it on the list of behavioral options?

When it comes to change, the sociological approach receives much criticism similar to that of Thelen (1999), who points to the tendency of it and of rational choice institutionalism to focus on the coordinating effects of institutions rather than as dynamic and interactive processes. As a result, both “...perspectives provide strong tools for understanding continuity, but by stipulating and privileging particular mechanisms of reproduction...they have a hard time incorporating notions of conflict and power, and they are not particularly helpful in talking about change” (387). March and Olsen (2006), however, have a different view:

“Institutions are not static; and institutionalization is not an inevitable process; nor is it unidirectional, monotonic or irreversible. In general, however, because institutions are defended by insiders and validated by outsiders, and because their histories are encoded into rules and routines, their internal structures and rules cannot be changed arbitrarily. The changes that occur are more likely to reflect adaptation to local experience and thus be both relatively myopic and meandering,

rather than optimizing, as well as 'inefficient', in the sense of not reaching a uniquely optimal arrangement" (6-7).

In the end, this view of change appears to be quite similar to that of historical institutionalism. However, there is a more individual-centered side to the sociological account. In delineating the sociological understanding, March and Olsen go on to point to the importance of changes in perception such as a loss in "faith in institutional arrangements" (13) and pressure for change engendered by the gap between aspirations and achievements. This is somewhat different than most historical institutionalist work in that they are pointing to the importance of individuals, whereas historical work tends to remain at the level of groups or institutional "orders." This is not to say that most sociological work is conducted at the individual level, but its mid-level analysis does have an individual cognitive base. Change, then, often comes about due to changes in individual perceptions, even though sociological work tends to obscure this by focusing on the aggregation of individual changes observable in shifts in group behavior.

### *Summary*

At the end of the day, whether one is laying rational micro-foundations, explicating the logic of appropriateness, or examining a dynamic historical process, the black box that is the human mind is left largely unexplored. Therefore, I argue that a psychological approach to the study of institutional development is needed. I agree

with rational choice institutionalists who begin with the individual and deduce propositions and testable hypotheses based on assumptions about individual behavior and how these individual choices interact and combine to produce aggregate level outcomes. I also agree with sociological and historical scholars who argue that individuals are not wholly independent actors, that the institutional and societal setting within which they are imbedded influence an individual's very thought process, and that the assumption of rationality is at best flawed and at worst foolish. As a result, I propose a research agenda grounded in psychological understandings of individual behavior. By beginning with the individual and laying micro-foundations based on how people actually understand and react to their social environment, I provide a more complete and nuanced understanding of institutional development.

This understanding begins with the important connection between perception and behavior outlined by Fiske and Taylor (1991). "...[S]ocial psychologists have decided that social behavior is more usefully understood as a function of people's perceptions of their world, rather than as a function of objective descriptions of their stimulus environment ... For example, an objective reward like money or praise that people perceive as a bribe or as flattery will influence them differently than a reward they perceive as without manipulative intent. What predicts their reaction, then, is their perception, not simply the giver's actions" (1991, 9). Thus the focus for researchers is on how individuals perceive their surroundings and not their putative need to maximize their personal utility. This is the case because it is individuals' perceptions that determine their goals and how they go about achieving them.

Additionally, it is with a focus on perceptions that one can tie together the three classic approaches to institutional development. It is the sociological and historical institutionalists' primary contention that individuals are imbedded within a societal web and a historical process that affect how they perceive the world around them and what they believe to be legitimate behaviors, often to the point that the individual is not a useful unit of analysis. Thus, like social psychologists, they argue that, in order to understand behavior, we need to understand the forces that influence perception. The difference is that the sociologist and historical institutionalist look externally for the forces influencing perception while the psychologist looks internally. For example, Heclo (2006) argues that an individual participating in an existing institutional structure begins to "think institutionally." Being a part of the institution connects one to the past and future of the institution and this affects one's perception of what is expected and what is acceptable behavior. That is, "institutions diffuse values beyond the personal preferences for the task at hand" (5). It is important not to simply dismiss the importance of these external forces, but a psychological approach can resurrect the individual as an instrumental component by using what we know about individuals' cognitive shortcomings, which are critical in determining behavior.

A psychological approach can also incorporate expected utility theory as one of the many ways individuals attempt to process information in order to understand their environment. That is, psychology puts rational choice in its place by not dismissing the potential for individuals to live up to the tenets of expected utility theory, but rather by acknowledging that they usually do not. Therefore, the psychological institutionalism I

advocate adopts the methods of rational choice and its focus on the individual as the unit of analysis. It substitutes psychological theories of human behavior for rational choice's simple assumption of rationality. It then places the individual in the larger world by incorporating the influence of the society, institution, and historical process of which the individual is a part.

### **A Psychological Understanding of Institutions**

Daniel Kahneman and Amos Tversky have devised several key concepts that contribute to a better understanding of how individuals process information and make choices: risk propensity and the reflection effect, loss aversion, the importance of reference points, the endowment effect, and status quo bias. In this section I argue that what we learn about human behavior through Kahneman and Tversky's work can be fruitfully applied to institutional development.

#### *Prospect Theory*

Kahneman and Tversky's (1979) prospect theory is presented in contrast to expected utility theory as a model of how individuals make choices under conditions of risk. Kahneman and Tversky argue for the importance of reference points on individuals' willingness to make risky choices. Reference points determine one's domain and one's domain determines one's willingness to accept risk. For example, expected utility theory (EUT) suggests that individuals are indifferent between gaining \$100 with certainty and a lottery with an even chance of gaining either \$0 or \$200. EUT makes the

same prediction if individuals are choosing between a certain loss of \$100 and a lottery with an even chance of losing either \$0 or \$200. However, Kahneman and Tversky find that, when faced with the first two choices, individuals find themselves in the domain of gains and are consequently risk averse (i.e. people disproportionately choose a certain gain of \$100 over a lottery). When faced with the second two options, individuals are in the domain of losses and are thus risk accepting (i.e. people will disproportionately choose the lottery over the certain loss of \$100).

As a result, we know that attitudes toward risk do not follow the tenets of expected utility theory, but that these attitudes are dependent on perception. That is, one's attitude toward risk depends on whether one perceives oneself to be in the domain of gains or losses, which results in attitudes that are risk averse and risk accepting, respectively. This finding helps to refine our understanding of how individuals evaluate and make choices.

Tversky and Kahneman (1991) extend their analysis to include riskless choice. Their central finding is that losses and disadvantages have a greater influence on preferences than do gains and advantages. Tversky and Kahneman define the key concepts of reference dependence and loss aversion as follows: "*Reference dependence*: the carriers of value are gains and losses defined relative to a reference point. *Loss aversion*: the function is steeper in the negative than in the positive domain; losses loom larger than the corresponding gains" (1039). In other words, individuals focus not on what they are going to get, but on what they are going to lose. One's reference point is

crucial in determining one's perception of gains and losses, and a shift in reference points can lead to a shift in preferences.

Two important and closely related consequences of loss aversion are (1) the instant endowment effect and (2) the status quo bias. Instant endowment is the finding that the value associated with giving up a good is larger than the value associated with receiving it (Kahneman et al. 1991). That is, individuals place more value on a good when faced with losing it than they did when they obtained it. This affects bargaining because individuals inflate the value of what they have when faced with the prospect of losing it. The status quo bias is an understanding of the important role that the status quo plays when its retention is an option. A decision maker who would otherwise be indifferent between  $x$  and  $y$  prefers  $x$  to  $y$  when the status quo is  $x$  and  $y$  to  $x$  when the status quo is  $y$  (Knetsch 1989; Knetsch and Sinden 1984; Samuelson and Zeckhauser 1988). This work demonstrates the particular importance of the status quo as a reference point.

As a result, prospect theory encompasses expectations about perception and behavior. (1) Individuals are risk averse in the domain of gains and risk accepting in the domain of losses. (2) Individuals evaluate their options in relation to a reference point. Shifts in the reference point can cause a shift in an individual's preferences. (3) Individuals are particularly averse to losses. That is, losing \$10 hurts one more than gaining \$10 makes one happy. (4) Individuals endow what they have with more value when faced with losing it than when they gained it. (5) Individual preferences are biased toward the status quo.

### *Applied Prospect Theory*

As I have argued earlier, I view the institutional development narrative as consisting of three distinct yet overlapping parts. First are the causes of stability, second are the causes of change, and third is the derivation of goals. The first two parts have been the focus of much work coming from all three of the traditional perspectives (rational choice, sociological, and historical). The third part is less the focus of analysis than the inevitable product of the traditional perspectives' story. Here I look to change that by applying what is learned from prospect theory to a specific institutional change context.

Applying a psychological theory, such as prospect theory, in the context of institutional change requires the ability to identify how elite actors perceive their context from a distance. Psychological theories are commonly applied mass political behavior. In such situations, scholars are often afforded the opportunity to question subjects, administer surveys, or conduct experiments. Unfortunately, for those interested in applying psychological theories to elite behavior, these options are unavailable. Thus, scholars' only choice is to impute perception.

The need to impute perception is the greatest challenge one faces when conducting this type of analysis. In order to overcome this barrier, one needs to draw from a rich and detailed understanding of the institutional context. In virtually all institutional change situations, the players have some prospect for loss and multiple options that are more or less risky once put in place. Through close analysis, one can

identify how a particular context can drive individuals into the domain of gains or losses. In doing so, one can identify choice sets for the players and make predictions about the goals the players are likely to pursue.

For this first attempt at applying a psychologically based theory to explain goal formation, the choice of institutional change contexts is critically important. The ideal context would be one where the first two parts of the institutional change narrative (i.e., causes of change and stability) are controlled for. This would create an opportunity to focus directing on how the participants in change choose their goal(s), without the added complexity of determining when or if change will happen at all. Fortunately, there is a situation where institutional change is essentially scheduled to occur at regular intervals. This situation arises every ten years when states are tasked with redrawing congressional districts.

After a series of landmark Supreme Court cases in the 1960s (*Baker v Carr* 1962, *Wesberry v Sanders* 1964, and *Reynolds v Sims* 1964) the redistricting revolution began. The Court required that both congressional and state legislative districts be roughly equivalent in population. This has set in motion a process, occurring after each decennial census, that is one of the most hotly contested political events one is likely to observe. Each state sets about redrawing its districts in order, ostensibly, to fulfill the Court's requirements. Some states rely on the state legislature to draw districts, other set up commissions to handle the job, while others end up with districts drawn by state or federal courts.

By focusing on congressional redistricting, I am able to control for any concerns about when redistricting might occur or why. This will afford this analysis the opportunity to zero in on goal formation. The goals of redistricting participants have been much discussed in the literature and they boil down to two general desires: (1) maximizing the party's seats and (2) protecting the party's incumbents (Cox and Katz 2002; Desposato and Petrocik 2005; Gelman and King 1994; Wyrick 1991). But how far parties are willing to go in one direction or the other has been left unexplored. Prospect theory can help fill this void.

In conducting this analysis there are three primary concerns. First, how does prospect theory connect to the real world of congressional redistricting? That is, prospect theory has been generated in the laboratory, but the real world is often far more complex than the experimenter's laboratory. How does bridge this gap? Second, how does one measure perception in the real world? Even if one can identify the players' goals, how does one measure perception in order to impute the domain the participants find themselves in? Third, does any of this matter? That is, are there real world consequences to being in the domain of gains or losses? In the context of congressional redistricting, do participants predictably gain or lose seats when they are in the domain of gains or losses?

The following three chapters each address these concerns. Chapter two is designed to draw a connection between prospect theory, as it has been understood theoretically, and the context of redistricting. In order to do so, I conduct several experiments. One of the challenges of using the many concepts that are a part of what

is typically called prospect theory is that these different concepts have been derived and demonstrated in isolation. There is little guidance for the applied scholar on what is to be expected when two or more of these concepts appear to be at work at the same time. This is particularly problematic when these concepts send conflicting signals. Therefore, in chapter two I design and conduct experiments that build on prospect theory concepts, but tailor them to the specific context of redistricting.

Chapter three utilizes what is learned from chapter two's experiments about the context of congressional redistricting leading individuals in the domain of gains to choose risk accepting options and those in the domain of losses avoiding them. The focus of chapter three is on identifying and measuring perception because perception determines one's domain. There are two separate proxy variables used in order to do this, which are then included in a model predicting changes to the average competitiveness of a state's congressional districts during redistricting. Behavioral predictions are based on the interaction of the specific context parties find themselves in (i.e., partisan or bipartisan controlled redistricting) and how they perceive their choices (i.e., are they in the domain of gains or losses).

Chapter four takes the next step and asks whether the predictable changes to competitiveness have an effect on seat gains and losses. Scholars interested in redistricting have spent a great deal of time trying to determine the partisan effect of each round of redistricting. By building on what is learned in chapter two about how prospect theory connects to the context of redistricting and in chapter three about how parties' willingness to accept risk is influenced by how they perceive their choices, this

chapter is able to approach redistricting's effect on seat gains and losses from a new perspective. This chapter constructs short term and long term choice models predicting whether or not the majority party in the state gains seats, loses seats, or stays the same.

## Chapter 2: Behavioral Expectations when Prospect Theory's Many Effects Send Conflicting Signals

Proposed by Kahneman and Tversky (1979) as an alternative to expected-utility theory, prospect theory's original experiments and numerous extensions and replications have firmly established how individuals think about and weigh alternatives. As a theory of decision making, it is both more nuanced and precise than expected-utility theory. Although prospect theory's three decades of life have been quite successful, it appears to have reached a crossroads in its lifespan. While scholars have continued to refine our understanding of significant portions of prospect theory such as the framing effect (Kühberger 1998), others attempting to apply it to the real world have fallen behind (Boettcher 2004). Where does prospect theory go from here?

I argue that the path for advancing the theory is found in how and where it is being applied by scholars. That is, rather than thinking about theory and application as two distinct endeavors, the future of prospect theory is found in how the real world can inform the theory in order to continue to refine our understanding of how behavior is affected by the choice context. The real world is more complicated than any experimenter's laboratory and it is in this complexity that we will find the inspiration to advance the theory itself.

Prospect theory's experiments have documented many different effects in isolation (e.g. loss aversion, status quo bias, and the endowment effect).<sup>3</sup> However, the problem facing scholars attempting to apply prospect theory is that it is difficult to

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<sup>3</sup> I utilize the label "prospect theory" as an umbrella term covering the many works of Tversky and Kahneman and those they have spawned (Levy 1992).

neatly parse the real world into situations where one of these effects applies, while another does not. Often scholars find themselves facing circumstances where two or more of prospect theory's documented effects seem to be at work with little guidance from the theory on how to deal with these situations. This problem is significant not just on the applied side, but also for the theory itself. If prospect theory is to accomplish its original goal and be a more accurate representation of how individuals make choices, it needs to continue to grow as a theory. In particular, I focus on loss aversion and the reflection effect. The reflection effect is the bedrock finding of prospect theory. It suggests that individuals in the domain of gains will be risk averse and individuals in the domain of losses will be risk accepting. Loss aversion points to the importance of loss in decision making. It indicates that individuals are affected to greater extent by the prospect of losses than by the opportunity for gain. However, what is less clear is how loss aversion interacts with risky choice. Therefore, I take these first steps toward developing an understanding of behavior when two of prospect theory's many effects send conflicting signals.

### **Prospect Theory's Effects and Deficiencies**

The experimental evidence in support of prospect theory demonstrates how choice behavior systematically deviates from the predictions of expected-utility theory. Its documented effects are numerous. First, prospect theory's central concern is with reference points. Individuals are more sensitive to changes in their condition than to the absolute value or quality of their circumstances (Kahneman and Tversky 1979; Tversky

and Kahneman 1981,1991). This reference dependence has been demonstrated through the manipulation of reference points in experimental questions such as those in the work of Quattrone and Tversky (1988). Here the authors ask questions to subjects about policies advocated by two hypothetical presidential candidates that affect their country's standard of living. They find that individuals' preference for one or the other candidate depends on the expected standard of living in other countries, i.e. the reference point.

Importantly, this reference dependent choice is quite systematic due to a second effect documented in prospect theory known as the reflection effect. This effect has been demonstrated experimentally by manipulating the framing of questions such as in the work of Tversky and Kahneman (1986). For example, the authors ask subjects to suppose that they suddenly find themselves richer by some sum of money. In the gains form of the question, they are asked to choose between the certain gain of \$100 or a lottery with a fifty percent chance of gaining \$200 and a fifty percent chance of gaining nothing. The majority of subjects chose the certain gain. In the loss form of the question, they are asked to choose between the certain loss of \$100 and a fifty percent chance of losing \$200 or nothing. The majority of subjects chose the lottery. Here, the preference reversal is directly attributable to whether or not the certain outcome is framed as a loss or as a gain. This also highlights a third effect known as the certainty effect (Kahneman and Tversky 1979). Individuals place more weight on outcomes gained with certainty in relation to those gained with some probability.

The asymmetry between gains and losses documented in these experiments leads to an important conclusion about individual's propensity to accept risk. People who find themselves in the domain of losses tend to be risk accepting, while those who find themselves in the domain of gains tend to be risk averse. This is known as the reflection effect (Kahneman and Tversky 1979). The reflection effect has been demonstrated experimentally numerous times. For example, Slovic and Lichtenstein (1983) ask subjects a hypothetical question about U.S. preparations to combat an infectious disease that is expected to affect 600 people. Two alternative programs are proposed to combat the disease. In one question, the choice is between program A where 200 individuals will be saved and program B where there is  $1/3$  probability that 600 people will be saved and a  $2/3$  probability that no one will be saved. In the other question, the choice is between program C where 400 people will die and program D where there is a  $1/3$  probability nobody will die and a  $2/3$  probability that 600 people will die. In the first case, subjects chose program A and in the second case subjects chose program D, demonstrating how individuals in the domain of losses are risk accepting, while individuals in the domain of gains are risk averse.

People's need to avoid losses leads directly to another effect found in prospect theory known as the endowment effect. People overvalue the items they possess (Thaler 1980). This is particularly troubling in bargaining situations and has been documented experimentally in works such as Knetsch and Sinden (1984). The authors randomly distributed lottery tickets colored one of two colors. The lottery tickets were good for a raffle with prizes of either a \$70 gift certificate or \$50 cash. One color was

given the option to pay \$2 to keep their lottery ticket. The other color was given the option to sell their lottery ticket for \$2. The results of the experiment were that individuals given the option to sell their ticket valued it significantly more than the individuals who were given the option to buy their ticket (i.e. subjects were not willing to pay two dollars to acquire the ticket, which means it was worth less than two dollars to them and subjects were unwilling to sell the ticket for two dollars, in which case it was worth more than two dollars).

The endowment effect leads directly to another concept in prospect theory known as the status quo bias. A decision maker who would otherwise be indifferent between  $x$  and  $y$  prefers  $x$  to  $y$  when the status quo is  $x$  and  $y$  to  $x$  when the status quo is  $y$  (Knetsch 1989; Knetsch and Sinden 1984). This has been documented in works such as Samuelson and Zeckhauser (1988). The authors construct two versions of a question asking subjects to choose among four investment portfolios for money they have inherited. The first version of the question is effectively neutral and offers no indication of how the money has been handled in the past. The second version of the question indicates a status quo by telling subjects where the money had previously been invested. As expected, the presence of a status quo caused individuals to systematically choose it over the other alternatives.

Prospect theory is not limited to risky choice, however. Kahneman and Tversky (1991) extend the theory to riskless choice. Tversky and Kahneman (1991) demonstrate that “losses and disadvantages have greater impact on preferences than gains and advantages” (1039). Individuals place more weight on losses than gains and seek to

avoid losses more than they seek to obtain gains (Kahneman, Knetsch, and Thaler 1991). They demonstrate this experimentally by constructing questions asking subjects to imagine they are finishing up training in a part time job that had long periods of isolation and is a 10 minute commute. They are now looking for full time employment and are asked to choose between two options that vary on the social interaction and commute time dimensions. The first option is a job that offers limited social interaction and a commute time of 20 minutes. The second option offers moderate social interaction and a commute time of 60 minutes. In this case individuals systematically chose the first option. However, when the authors changed the reference point (i.e. the part time job) to much pleasant social interaction and 80 minutes of commute time, the subjects systematically chose the second option, thus demonstrating that even when the choice contains no inherent risk, individuals evince a marked aversion to loss.

Loss aversion has been further expanded to include the concept of myopic loss aversion (Tversky and Kahneman 1992). This is a situation where individuals evaluate their options as a single event rather than an iterative process. For example, the majority of individuals will choose to not participate in a single coin flip gamble where on heads they will win \$200 and on tails they would lose \$100. This is attributed to loss aversion. An individual who displays myopic loss aversion will also refuse to participate in series of 100 coin flips offering the same payoffs (Samuelson 1963). Thaler et al. (1997) explore this concept further in relation to how loss aversion affects the choice to participate in the equities market or the bond market and finding that the more frequently individuals evaluate their options, the more risk averse they become.

Scholars often demonstrate multiple prospect theory effects in a single experiment. However, the extent literature is less clear about how one would expect people to behave when two or more of these documented effects conflict. For instance, loss aversion suggests that individuals who face a choice between several alternatives will seek to minimize their potential losses from a given reference point. Loss aversion can lead to risk acceptance or risk aversion depending on the reference point. Additionally, prospect theory's predictions regarding attitudes towards risk are that when placed in the domain of losses, people will be risk accepting, and when in the domain of gains, they will be risk averse. Therefore, on the one hand, when avoiding loss can be achieved without any risk (such as choosing the status quo in many cases), it can cause people to leave comparatively easily achieved gains on the table. On the other hand, when avoiding loss is difficult, it can push people to accept tremendous risk, which is the basis of much of comparative and international relations' applications of prospect theory (e.g., Berejikian 2002, Fanis 2004).

The real world does not always give individuals clear choices. It is entirely possible that individuals will face a choice that simultaneously asks them to be risk averse and loss accepting. In fact, this is the situation facing political parties when attempting to redraw congressional districts after the decennial census. It is well understood in the congressional redistricting literature that parties in state legislatures across the U.S. face a choice between creating safe districts for their party or attempting to maximize the total number of seats they win (Cox and Katz 2002; Desposato and Petrocik 2005; Gelman and King 1994; Morrill 1981; Wyrick 1991). They cannot

simultaneously avoid the loss of safe seats while maximizing the total seats they win.

That is, they cannot maximize both total wins and safe seats. How does one apply the concepts found in prospect theory when several of these concepts appear applicable to a particular situation? This becomes particularly vexing when the expected behaviors suggested by prospect theory conflict.

For scholars interested in applying prospect theory to the real world, situations like congressional redistricting present a significant problem. Parties' attitudes towards risk are surely important factors in how they draw districts. Fortunately, prospect theory provides tremendous guidance in this area. If a party in the domain of losses is risk accepting, it should seek to maximize its seats. But in order to do this, it would need to accept the loss of one or more of the party's safe seats. This is because in order to gain seats, the party must move voters from its safe districts to districts that it hopes to win. Prospect theory's teachings about loss aversion appear equally applicable to the redistricting process. Loss aversion would suggest that parties should be unwilling to accept the losses necessary to maximize their seats, i.e., they should strengthen their safe seats or, at least, maintain the status quo.

What happens when a party is risk accepting and loss averse? The experimental literature's first steps in this direction come from work inspired by the financial markets. Thaler et al. (1997) explore the connection between loss aversion and risk propensity when choosing between equities and bonds. They find that investors' willingness to accept risk is affected by how often they evaluate their options and their time horizons. While this work provides an excellent first step into exploring one aspect of how loss

aversion and risk interact, it does not help in the context of congressional redistricting. When choosing between investment portfolios individuals have one goal (i.e., to make money). Thus, the concern for Thaler et al. is about determining what causes individuals to fail to maximize the amount of money they make.

However, in the context of congressional redistricting, parties have two goals (maximize seats and protect their incumbents) that they cannot achieve together. Thus, the concern here is with how individuals choose between these two goals. Loss aversion would suggest that individuals will choose to protect their incumbents and the reflections effect suggests that individuals' willingness to accept risk is dependent on their domain, which can lead to either choice. To my knowledge, there has yet to be any work exploring how loss aversion and risk propensity interact in a context like congressional redistricting, which leaves the applied scholar with little to work with.

Another significant recent attempt to deal with this type of problem focus on framing (Boettcher 2004; Kanner 2004). This is an important focus of study, given the significance of framing in determining one's risk propensity. That is, simple changes in how questions are framed alter one's attitude towards risk, which changes behavior. Thus, the most important problem facing scholars attempting to apply prospect theory is identifying how the choices individuals make are being framed. Behavioral expectations are clear once one knows the frame. The difficulty is that prospect theory lacks a theory of framing. As a result, applied scholars produce their own solutions on a case by case basis (McDermott and Kugler 2001; Taliaferro 1998).

The problem with much of the focus on identifying the frame is that it still treats prospect theory's many effects in isolation, even when the political context is quite complex (Elms 2004). Doing this assumes there is no interactive effect between loss aversion and changes in risk propensity associated with the domain of gains and losses. In a situation like redistricting, the very fact that parties are forced to choose between safe seats and seat maximization is what makes it interesting. An attempt to focus just on loss aversion and safe seats or risk acceptance and seat maximization is only seeing part of the larger picture. The fact that parties must make their decisions while weighing concerns about both safe seats and seat maximization makes this situation fundamentally different than if, in a hypothetical world, they were concerned only with one or the other of these problems. Any attempt to isolate framing in relation to one of prospect theory's effects assumes exactly that. I argue that parties' seat maximizing behavior is affected by the fact that they are simultaneously concerned about their party's safe seats. As a result, the circumstances faced by parties (and those faced by other decision makers in other similar contexts) are not necessarily divisible and therefore need to be understood as a whole.

The difficulty is that the theoretical understanding of prospect theory's many effects is limited to how they influence behavior individually. For example, prospect theory makes a clear prediction about how individuals will choose when in the domain of losses or facing a choice that can lead to gains, but only when accompanied by some loss. It does not tell us how these two phenomena interact when choices are more

complex. Work designed specifically to address this important missing component will help to strengthen the theory and provide guidance to applied scholars.

### **Experimental Design and Results**

In order to clarify how one should expect individuals to behave when circumstances send conflicting signals, it is necessary to return to the experimental stage. Experiments are uniquely suited to allow scholars to isolate their variable(s) of interest. Prospect theory has relied heavily upon them to demonstrate its many effects. In the case of congressional redistricting, it is particularly important to incorporate conflicting signals from loss aversion and risk propensity. In addition, the status quo plays a role in nearly every real world situation in which scholars attempt to apply prospect theory. Therefore, it is necessary to design an experiment that incorporates conflicting signals from the effects of loss aversion and risk propensity along with an existing status quo.

The experiments presented here consist of two sets of replications and two sets of interactions. The replication experiments draw from prospect theory's loss aversion and reflection effect experiments with the key difference being the use of a redistricting story. The interaction experiments then build on these replications by combining them in order to tease out the stylized version of the type of dilemma parties face when redrawing congressional districts.

While expectations for the replications experiments are clear, making precise predictions about the outcomes of the interaction experiments is more difficult.

However, if one looks at prospect theory's many different effects as a single whole, one is struck by how much of prospect theory is essentially demonstrating people's conservative tendencies. People want to hold onto what they have (loss aversion), overvalue what they currently possess (endowment effect), place more weight on things gained or lost with certainty (certainty effect), and prefer where they are to where they might go (status quo bias). It is only when circumstances make people think that some loss is assured that they seek a way to avoid it, or when a reference point makes them think that they are not getting what they deserve that they begin to seek a way to balance the situation (reflection effect). Thus, these interaction experiments are a search for what causes individuals to forgo safety and seek risk in more complex circumstances.

The experiments presented here were conducted at George Washington University. The subjects were undergraduate students and the questions were asked in a classroom setting. Questions were randomly distributed to the participants with each subject answering only one question. Each question involves a simple choice between two options. The subjects were assured that each response was entirely voluntary and anonymous. The questions used can be found in the Appendix with the number of respondents denoted by  $N$  and the percentage that chose each option in parentheses.

### *Replication Experiments*

The first two questions are basic replication questions. They follow the standard prospect theory formula for demonstrating loss aversion (Tversky and

Kahneman 1991). Respondents were given a simple setup with a status quo congressional district plan that had two dimensions, (1) party enthusiasm and (2) safe seats. Subjects were asked to choose between two new redistricting plans that varied on these two dimensions. In both questions, LA1 and LA2, New Plan A represents the loss averse option because Plan A offers the respondent the smallest loss on either dimension when compared to the status quo (i.e. Current Plan). The expected choice subjects make is in reference to the status quo. In question LA1, the status quo provides for little party satisfaction and 10 safe districts. Prospect theory predicts that when choosing between the two new plans, individuals will be more concerned with avoiding losses rather than maximizing gains. Thus, subjects will choose New Plan A. The predicted result for question LA2 is the same except the payoff structure has changed. In LA2, subjects will be choosing New Plan A in order to minimize the loss of party satisfaction rather than the number of safe districts.

Table 2-1

Loss Aversion Replication Results		
Options	Results	
	LA1	LA2
New Plan A	71%	65%
New Plan B	29%	35%

Notes: *N*: LA1 = 49; LA2 = 52

Table 2-1 presents the results from the Loss Aversion experiment. As expected, respondents chose to avoid losses in both instances. In question LA1 71 percent of respondents chose New Plan A and 65 percent chose New Plan A in question LA2. In question LA1 respondents chose to minimize the loss of safe seats (moving from the status quo of 10 to 8) rather than trying to maximize their gain of party enthusiasm by moving from little to great enthusiasm. In question LA2 respondents chose to minimize the loss of party enthusiasm (moving from the status quo of great enthusiasm to moderate enthusiasm) rather than trying to maximize their gain of safe seats by moving from 6 to 10. These results once again confirm the loss aversion effect.

The second experiment is another replication. Questions RE1 and RE2 were inspired by prospect theory's standard demonstration of how one's risk propensity changes based on the framing of outcomes known as the reflection effect (Kahneman and Tversky 1979; Tversky and Kahneman 1986). In the classic questions used by Tversky and Kahneman, the subjects are asked to choose between a certain gain (loss) of \$100 and a lottery resulting in either a \$200 gain (loss) or nothing. When in the domain of gains, individuals choose the certain gain. When in the domain of losses, individuals choose the lottery. The questions used here offer the choice between a certain gain (loss) of eight seats versus a lottery between winning (losing) either 4 or 12 seats. The payoffs for each choice equal eight thus suggesting that subjects should be indifferent between the two options. In addition, the questions include a status quo point equal to the first option, i.e. win (lose) eight seats, which is included to more accurately mimic real world context.

Table 2-2

Reflection Effect Replication Results		
Options	Results	
	RE1	RE2
Plan A	71%	47%
Plan B	29%	54%

Notes:  $N$ : RE1 = 45; RE2 = 43  
 Pearson  $\chi^2 = 5.504$  Pr = .019

Table 2-2 presents the results from the reflection effect replication. In question RE1, a large majority (71.1 percent) chose to retain the status quo by opting for Plan A. Question RE2 is less definitive, with a slight majority (53.5 percent) choosing the risky option of Plan B. A Pearson  $\chi^2$  test indicates that subjects answering question RE2 are significantly more likely to choose the lottery than those given question RE1. Thus, the importance of the framing of the outcomes is once again confirmed.

However, the inclusion of the status quo as an option appears to have diminished the effect of the domain of losses. That is, question RE2 places individuals in the domain of losses by using loss terminology similar to Tversky and Kahneman (1986). This past work has found much larger majorities choosing the risky option. A simple test of the hypothesis that the proportion of individuals choosing the risky option in question RE2 (.535) is greater than what would be expected if subjects chose at random (.5) indicates that we cannot reject the null hypothesis that they are no different (Pr = .323). Therefore, the results of the reflection effect replication indicate that individuals are relatively more likely to choose the lottery when the frame places them in the domain

of losses rather than the domain of gains (i.e., the reflection effect holds). However, given the fact that individuals are in the domain of losses, they are no more or less likely to choose the risky option.

### *Interaction Experiments*

The two classic prospect theory replications provide the building blocks for two interaction experiments. I will combine the riskiness found in the reflection effect experiment with the certain gains or losses of the loss aversion experiment. The first interaction experiment is simple. It has two questions (Simple1 and Simple2) designed to combine both the effects of risk propensity and the effects of loss aversion. Subjects are asked to choose between two redistricting plans based on two pieces of information: (1) the number of guaranteed wins and (2) the likelihood of winning some number of seats. The questions can be found in the Appendix.

As with the replication experiments, all of these questions begin with a background story about the Liberty party. In question Simple1, the status quo is that the Liberty party has controlled 9 congressional seats for the last 12 years. Subjects are also given an expert prediction about the number of seats their party could win in the next election. The question is written using the term “win” in order to put individuals in the domain of gains. The payoffs are structured in such a way that individuals should be indifferent between the two new plans (i.e. Plan A’s payoffs are  $11 \times .455 + 4 = 9$  and Plan B’s payoffs are  $11 \times .273 + 6 = 9$ , rounding to the nearest whole number) and each plan’s payoff is equal to the status quo of 9. In question Simple2, the status quo is also

9, but the terminology used in the question is designed to put individuals in the domain of losses by focusing on the number of seats the party is guaranteed to lose or likely to lose. Again, in question Simple2, the payoffs are designed such that individuals should be indifferent between the two new options (i.e. Plan A's payoff is  $11 \times .555 + 4 = 9$  and Plan B's payoff is  $11 \times .333 + 6 = 9$ ) and the payoffs are equal to the status quo.

Subjects are not given the option to retain the status quo, but rather need to choose between plans that vary on two dimensions. The first dimension is the loss aversion dimension and is similar to the first question set (i.e., how many seats will be won or lost with certainty). Looking at just the right hand side of plans A and B (the loss aversion side), one would expect subjects to choose the plan that minimizes loss from the status quo on this dimension. In question Simple1, which uses win terminology, the status quo is 9 seats and the choice is between a guaranteed number of either 6 or 4 seats. The choice would be Plan B with 6 guaranteed wins. In question Simple2, which uses loss terminology, the status quo is 9 losses and the choice is between a guaranteed number of either 6 or 4 losses. The choice would be Plan A with 4 guaranteed losses.

The second dimension is the risk propensity dimension, similar to the second replication experiment (i.e., how likely it is that they will win or lose 11 seats). Looking at just the left hand side of plans A and B, one would expect subjects to choose the plan that maximizes their probability of winning 11 seats or minimizes their probability of losing 11 seats. In question Simple1, the choice would be Plan A with a .455 probability of winning 11 seats. In question Simple2, the choice would be Plan B with a .273 probability of losing 11 seats. As a result, in isolation, the certain and the probabilistic

sides of the questions would lead to opposite choices. In question Simple1, focusing on the certain side leads to Plan B, and focusing on the probabilistic side leads to Plan A. In question Simple2, focusing on the certain side leads to Plan A, while the probabilistic side leads to Plan B. Breaking the interaction down into its constituent parts in this manner does not help one make predictions about the outcome because each side leads to different expectations. Thus, one needs to look at the choices as a whole.

Approaching each of the interaction questions from the point of view of the reflection effect points to the importance of risk. Each of these plans varies in how risky it is for the parties. In Simple1, Plan A is the plan that carries higher risk. One forgoes an additional 2 guaranteed wins for a better chance a maximizing one's total seats. That is, with Plan A, the party is drawing more competitive districts than in Plan B. This is a risky course of action because they need to predict the party's future for the next ten years. Partisan winds can easily change and these additional competitive districts could easily be lost. This has happened numerous times, e.g., Virginia Democrats controlled the process during the 1991 round of redistricting and produced a plan that resulted in the loss of half of their districts by the end of the decade. In Simple2, Plan A is also the plan that carries the higher risk. Parties would be accepting fewer guaranteed losses while putting themselves at greater risk of maximizing their total losses. This would also produce a situation where parties are creating more competitive districts. As a result, Plan A is the riskier choice in both questions.

In Simple1 subjects are put in the domain of gains with the use of win terminology. The reflection effect suggests subjects will be risk averse in such

situations. Plan B is the risk averse choice. In Simple2, subjects are put in the domain of losses with the use of loss terminology. The reflection effect suggests they should be risk accepting. Therefore, one would expect that subjects would choose Plan A. By adopting the perspective of the reflection effect, these predictions assume the riskiness associated with each of these choices plays a dominant role in the interactions. However, this may not be the case.

The second way to approach these interactions is through the lens of loss aversion. The concept of loss aversion has typically been demonstrated in riskless situations (Tversky and Kahneman 1991). Tversky and Kahneman's key finding "...is that losses and disadvantages have a greater impact on preferences than gains and advantages" (1039). Thus, loss plays a particularly important role in the decision making process. The interaction experiment is adding something new to the loss aversion equation. This new portion is the concept of one's domain, i.e., individuals are put in the domain of gains or losses and the probabilistic portion of the questions.

The interaction questions differ from Tversky and Kahneman's classic questions and the replication questions presented here (LA1 and LA2) in one key way. In the classic loss aversion questions, there are two separate dimensions (e.g., party enthusiasm and safe seats) that vary. In the interaction questions, there is only one consideration—the number of seats the party will have. There are two separate references to the number of seats (i.e., the guaranteed number and the probability of maximizing the number). Thus, the potential loss from the status quo needs to be considered in relation to both the certain and the probabilistic sides of the question. In

question Simple1, the status quo is 9 seats. Plan A offers a certain loss of 5 and Plan B offers a certain loss of 3. The probabilistic side, however, offers the opportunity of no loss at all. Thus, for the truly loss averse individual, maximizing the probability of no loss is the loss averse choice. As a result, from the loss aversion perspective, the choice would be Plan A.

In the case of question Simple2, individuals are being put in the domain of losses through the use of loss terminology. The status quo is the loss of 9 seats. Plan A offers a certain loss of just 4 and Plan B offers a certain loss of 6. The probabilistic side of the interaction offers the potential loss of 11 seats. Thus, the loss averse choice would be to minimize the potential loss of 11 seats. This would be the choice of Plan B. All told, there are two sets of expectations. From the perspective of the reflection effect, Plan B is the expected choice for Simple1 and Plan A is the expected choice for Simple2. From the perspective of loss aversion, the expectations are the exact opposite, Plan A for Simple1 and Plan B for Simple2.

Table 2-3

Simple Interaction Experiment Results		
Options	Results	
	Simple1	Simple2
Plan A	60%	42%
Plan B	40%	59%

Notes:  $N$ : Simple1 = 70; Simple2 = 65  
 Pearson  $\chi^2 = 4.597$  Pr = .032

The results for the simple interaction are found in Table 2-3. Question Simple1 gives subjects the chance to maximize their party's wins at the expense of guaranteed wins. A 60 percent majority of respondents chose New Plan A. This choice gives them the highest probability of maximizing the total number of seats their party can win, while only guaranteeing them 4 seats in the next election. This falls in line with the loss aversion expectations. Question Simple2 is framed as losses and subjects are choosing between options that vary by the number of guaranteed losses and probability that they will lose 11 total seats. Question Simple2 resulted in 58.5 percent of respondents choosing New Plan B. Choosing this plan means that subjects are willing to accept greater guaranteed losses in order to reduce their likelihood of losing 11 seats. This result also supports the expectations from loss aversion.

The Pearson  $\chi^2$  test indicates that the respondents who received question Simple1 were significantly more likely to choose New Plan A than those who received question Simple2. A test of the hypothesis that the proportion of respondents choosing New Plan A in question Simple1 is different than .5 produces significant results (Pr = .047). A test of the same hypothesis for question Simple2, however, falls short of conventional levels of significance (Pr = .085). Given that the sample sizes for each of these questions are relatively small, it is not too surprising to find a lack of statistical significance. The interesting result from this question set is that when outcomes were framed as gains, respondents were more likely to choose the risky option than when outcomes were framed as losses.

This new finding is due to the inclusion of the loss aversion components. Loss aversion appears to drive decision making and these findings suggest that individuals behave differently than previously understood by prospect theory when they face more complex choices that include a risk component and a certain component. Subjects in the domain of gains go for broke and accept both risk and losses, while subjects in the domain of losses appear to crawl into a fetal position where they are both risk and loss averse.

These are sufficiently interesting findings that a fourth set of questions (Comp1, Comp2, Comp3, and Comp4) that further explore how loss aversion and risk propensity interact were designed. These questions expand on questions Simple1 and Simple2 by altering how individuals are put in either the domain of gains or losses. The choices that subjects are given to choose from remain the same. They still have a certain component and a probabilistic component, although the specific values of these components have been altered.

Subjects are placed in the domain of gains or losses in the same way as in the first simple interaction, by framing the question using a focus on either how many seats will be won or lost. However, this second set of interaction questions also include a second piece of information in the background story that is designed to influence the domain subjects find themselves in. Question set four includes a substantive concern about whether or not the party typically wins a majority or minority of the state's districts. In previous questions, subjects were aware of the typical number of seats their party wins or loses, but were unaware of whether or not this number was a majority or

minority of total seats. In this second, more complex interaction, subjects are given this information. Thus, these four questions vary the framing in two ways, (1) through the use of either win or loss terminology and (2) whether or not the party has traditionally won a majority or minority of the districts.

As a result, there are two dimensions (minority/majority and win/lose) in the questions that can work to put subjects in the domain of gains or losses. There are a total of four questions in order to account for the four different combinations. The idea here is to determine whether or not different formulations of the question using additional information cause a systematic difference in the choices subjects make. In questions Comp1, Comp2, Comp3, and Comp4, the payoffs are again structured so that individuals should be indifferent between the two choices,<sup>4</sup> with the payoffs equaling the status quo number of seats the party has historically won or lost.

Expectations for questions Comp1 and Comp3 follow those of the Simple1 and Simple2. In the case of Comp1, individuals are put in the domain of gains both through the use of win terminology and a status quo that puts them in the majority. This is a clear case of being in the domain of gains and the expected choice from the perspective of the reflection effect would be New Plan A. From the perspective of loss aversion, the choice would be New Plan B. In the case of Comp3, individuals are put in the domain of losses with loss terminology (similar to question Simple2) and a status quo that puts them in the minority. Therefore, from the perspective of the reflection effect, subjects

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<sup>4</sup>Question Comp1, Plan A's payoff is  $11 \times 18.2 + 6 = 8$  and Plan B's payoff is  $11 \times .364 + 4 = 8$ . Question Comp2, Plan A's payoff is  $9 \times .222 + 4 = 6$  and Plan B's payoff is  $9 \times .444 + 2 = 6$ . Question Comp3, Plan A's payoff is  $11 \times .286 + 5 = 7$  and Plan B's payoff is  $11 \times .571 + 3 = 7$ . Question Comp4, Plan A's payoff is  $9 \times .222 + 7 = 9$  and Plan B's payoff is  $9 \times .444 + 5 = 9$

are expected to choose New Plan A, and from the perspective of loss aversion, they are expected to choose New Plan B.

The expectations for questions Comp2 and Comp4 are more complicated because one's domain is not as clear cut. The terminology used (i.e., win or lose) conflicts with the majority or minority status of the party. In Comp2, subjects are placed in the domain of gains through the use of win terminology, but placed in the domain of losses based on traditionally being in the minority. In this case, I would expect these conflicting signals to lessen the effect of domain, which plays a key role when approaching these questions from the reflection effect perspective, but not from the loss aversion perspective. The predicted outcome from the perspective of the reflection effect would be New Plan A, while from the perspective of loss aversion, it would be New Plan B. In the case of Comp4, which uses loss terminology with the party being in the majority, I would expect the reflection effect prediction to be New Plan B, and the loss aversion effect prediction to be New Plan A.

Table 2-4

Complex Interaction Experiment Results				
Options	Results			
	Comp1	Comp2	Comp3	Comp4
Plan A	52%	45%	81%	67%
Plan B	48%	55%	19%	33%

Note: *N*: Comp1 = 62; Comp2 = 60; Comp3 = 62; Comp4 = 67

Questions Comp1 and Comp2 use win terminology. In question Comp1, subjects are told that their party has traditionally held a majority of the state's fifteen congressional seats, while in question Comp2, subjects are told their party has won a minority of that state's districts. As can be seen in Table 2-4, a slight majority (52 percent) of respondents chose New Plan A in question Comp1. In question Comp2, a larger majority (55 percent) of respondents chose New Plan B. This is an interesting result, as it appears that traditionally being in the minority may cause individuals to choose the riskier option. It is also the first time subjects have chosen a plan predicted by the reflection effect. However, a test of the hypothesis that either question's results are different than what we would expect to see if subjects were choosing at random reveals that we cannot reject it (question Comp1 Pr = .40; question Comp2 Pr = .22). Additionally, a Pearson  $\chi^2$  test indicates that there is no difference in the responses to these two questions (chi2 = .534 Pr = .465).

Questions Comp3 and Comp4 use loss terminology. Question Comp3 indicates that subjects have lost a minority of districts, while question Comp4 indicates subjects have lost a majority of districts. The results for both of these two questions are significantly different than those for questions Comp1 and Comp2. As can be seen in Table 2-4, a large majority (81 percent) of respondents to question Comp3 chose New Plan A. Question Comp4 has a similar result with 67 percent of subjects choosing New Plan A. Similar to question Comp2, respondents who found themselves losing a majority of districts tended to choose the riskier option (New Plan B) more often than those losing a minority of districts. Unlike questions Comp1 and Comp2, a test of the

hypothesis that these results are different than what we would expect to see if individuals were choosing at random yields significant results (question Comp3 Pr = .000; question Comp4 Pr = .002). However, a Pearson  $\chi^2$  test indicates that at conventional levels of significance there is no difference in the responses to the two questions (chi2 = 3.02, Pr = .082). Importantly, in three of the four questions the loss aversion prediction was chosen.

Table 2-5

Combining Complex Experiment's Results Based on Terminology		
Options	Results	
	Comp1 & Comp2 (Win)	Comp3 & Comp4 (Lose)
Plan A	48%	74%
Plan B	52%	26%

Notes: N: Comp1 & Comp2 = 122; Comp3 & Comp4 = 129  
 Pearson  $\chi^2 = 16.904$  Pr = .000

While the raw results from both Comp2 and Comp4 suggest that when individuals find themselves in the minority they are more likely to choose the risky option, the Pearson  $\chi^2$  test fails to reach significance. Therefore, in order to help clarify the results, I combine the two pairs based on the framing terminology, i.e. Comp1 and Comp2 use win and Comp3 and Comp4 use loss.<sup>5</sup> The combined results are presented in Table 2-5. As expected, the Pearson  $\chi^2$  test indicates that the subjects who received the

<sup>5</sup> A second way to combine these questions would be along the minority versus majority dimension, i.e. Comp1 and Comp3 both put individuals in the majority and Comp2 and Comp4 both put individuals in the minority. However, in both instances a Pearson  $\chi^2$  test indicates that there is a difference in the responses.

loss terminology questions were significantly more likely to choose New Plan A. This result supports the loss aversion perspective. The interesting part of these results is that they are telling the same story as the first simple interaction experiment that follow the predictions made from the loss aversion perspective. The questions that use loss terminology are the ones that result in risk averse choices because the risk averse choice also happens to be the most loss averse choice. This is the opposite of what one would expect to see given prospect theory's past findings regarding the effect of domain on one's willingness to accept risk.

## **Discussion**

The many experimental demonstrations of prospect theory's effects have shown the importance of reference points. Reference points are the catalyst for choice behavior. This is a great benefit for applied scholars. In many instances analysts can identify and describe the circumstances their subjects find themselves in with great accuracy. What these scholars do not know is what their subjects are thinking. The mind is the quintessential black box. One knows that certain stimuli go in and then one can observe the behavior that comes out, but one does not know how the input stimuli combine with what is already in the box, which ultimately produces the outcome behaviors one observes. Prospect theory has gone a long way in helping to illuminate certain portions of that black box, or in some respects bypass the box altogether. It demonstrates that subject *W* will likely make choice *X* if stimulus *Y* frames the choice set as *Z*. This is because choice *X* follows directly from *Z* which follows directly from *Y*.

Thus, this is a great advancement because now applied scholars only need to identify the  $Y$  to  $Z$  connection (i.e. the reference point to frame connection). This is easier said than done, of course, and why there has been so much concern about the lack of a theory of framing.

The work presented here is a further refinement of the reference point ( $Y$ ) to framing ( $Z$ ) to behavior ( $X$ ) connection. I argue that reference points or the choice context can be far more complex than has heretofore been understood in prospect theory. These more complex reference points increase the difficulty in understanding how the reference point is framing the choice set for subjects. This can often make unclear what one's behavioral expectation should be in these circumstances. Therefore, I have designed a series of question sets that aim to take the first steps in developing a broader understanding of behavior in these more complex settings.

The interaction experiments present some interesting results. The questions presented a combination of prospect theory's loss aversion and its ideas about attitudes towards risk found in the reflection effect. Loss aversion and the reflection effect each suggested different behavioral expectations with the results of the experiments demonstrating that in these contexts loss aversion trumps the reflection effect. Subjects routinely chose the option that gave them the best opportunity to minimize their loss. The interesting part of these choices is that sometimes this led subject to be risk accepting and at other times they were risk averse. In fact, individuals were risk accepting in the domain of gains and risk averse in the domain of losses, which is the opposite of what traditional prospect theory has found. This is a particularly important

finding for scholars attempting to apply prospect theory to the real world. A traditional application of prospect theory in a situation like this would lead to incorrect predictions and perhaps the spurious conclusion that prospect theory is incorrect or not applicable.

Moving beyond the experimental world for evidence, Dusso (2009) tests the results from these experiments with data from the last three congressional redistricting cycles. In that work, I demonstrate that changes to the average competitiveness of a state's congressional districts are dependent on whether or not a party finds itself in the domain of gains or losses. The results are as the interaction experiments would predict. When the context presented parties with both a concern for maximizing their seats and protecting their incumbents, parties in the domain of gains were risk accepting and increased average competitiveness, while parties in the domain of losses were risk averse and decreased average competitiveness.

The broader lesson to be learned here is that more careful attention needs to be paid to the choice context. When identifying the choices subjects face, it is not enough to simply identify that there is a risk component or a loss aversion component or some other effect in isolation. Scholars also need to identify the combination of effects that are in play. Once they have been identified, they cannot then be treated as if they are isolated effects, but must be understood in combination. Both future applied scholarship and the theory itself will benefit from this, as a better and more nuanced understanding of choice behavior develops.

### Chapter 3: How Parties' Attitudes towards Risk Affect the Districts They Draw

What is it that parties are trying to accomplish when they set about drawing new congressional districts? Scholars have provided many answers to this question, usually juxtaposing concern for incumbents with maximizing total seats (Wyrick 1991). Desposato and Petrocik (2005) answer by stating that “the key to every redistricting among those orchestrating them is to sort voters according to their inferred party preference in a way that (1) maximizes the electoral security of (2) the largest possible number of office holders for their party” (35). Cox and Katz (2002) have a more general answer saying, “each party likes to have more seats rather than fewer, and each is risk averse. Each makes a strategic decision regarding how much bias and how much responsiveness its ideal redistricting plan would have...” (32). Morrill (1981), focusing more on safe seats states, “[p]olitical parties are inclined toward a strategy which gives each party a core of safe seats, especially for the leadership, which will survive even a landslide for the other party” (26).

Gelman and King (1994) sum up the literature's competing concerns quite well stating, “some scholars assume that those who draw the district lines are motivated by incumbent protection, whereas others believe that motivation is partisan advantage, but even the briefest discussion with participants in the process indicates that redistricters are concerned with both. Indeed, these are competing goals: incumbents are often forced to give up votes (hence electoral safety) in order to increase the number of legislative seats their party is likely to capture” (541). This is the problem

that parties face when they are drawing districts. On the one hand, they would like to win seats with ease and protect all their incumbents. On the other hand, they would like to maximize the total number of seats they win. These are goals that cannot be achieved together. In order to gain seats, parties must move their supporters into districts they have lost in the past. This means taking voters from districts they have traditionally won, which, in turn, makes their incumbents less safe.

All told, scholars are in relative agreement when it comes to what parties are trying to do when they redraw congressional districts. Yet, despite the recognition of this central concern, scholars have provided little in the way of explaining why parties choose to move in one direction rather than the other. That is, why do some parties look to protect their incumbents rather than maximize their seats, while other parties seek partisan gain at the expense of incumbent safety?

I take a new approach to answering this question that draws its inspiration from psychological theories of human behavior. In particular, I utilize prospect theory (Kahneman and Tversky 1979) to explain how parties' perceptions affect their willingness to accept risk. The result is to treat attitudes towards risk as a variable that leads to predictable behavior when drawing new congressional districts. Using observational data collected from the last three redistricting cycles, I show how the combination of a party's perception of their own strength interacts with the context it finds itself in to produce predictable changes to average district competitiveness in the state.

## **Maximize Seats or Protect Incumbents?**

Parties' competing concerns over seat gains and incumbent protection have received considerable attention from scholars. A significant amount of research has focused on redistricting's effect on incumbents and comes to conflicting conclusions. Some work suggests that incumbents benefit from the process (Bullock 1975; Lyons and Galderisi 1995), while others suggest the opposite (Campagna and Grofman 1990; Gelman and King 1994). For example, Desposato and Petrocik (2005) do an excellent job demonstrating how a constellation of events and effects (i.e. the incumbent's personal vote, redistricting, partisanship, and electoral saliency) vary across time and space and can lead to incumbents winning big or losing their seats all together. Additionally, a larger portion of the redistricting literature has focused on the partisan effects of redistricting. This work also produces conflicting results, but with the agreement that to the extent that parties can gain from the process it happens during single party controlled redistricting (e.g., Abramowitz 1983; Born 1985; Cain 1985; Engstrom 2006; Grofman and Brunell 2005; Squire 1985).

However, these traditional approaches to the study of redistricting rarely explore why parties choose to favor incumbent protection over partisan gain (or vice-versa). One recent exception that focuses specifically on what causes parties to favor seat gains over incumbent protection at the state level comes from Schaffner et al. (2004). They find that term limits in state legislatures generate open seats. This gives the party the ability to more freely maneuver their voters in an attempt to win more seats. This implies that open seats cause parties to lean more towards partisan gain than

incumbent protection, indicating that incumbents exert some influence over the process. However, other work suggests that incumbents may not be as successful at influencing the process as they might like because they are more likely to face a quality challenger early in the new redistricting cycle than later (Hetherington et al. 2003).

To the extent that work on congressional redistricting is theoretical, it draws from a classic rational choice perspective. In the words of Krehbiel (1987), this boils down to three ingredients: "...the *preferences* of decision makers for various policies; the *institutional features* that specify when, how, and by whom decisions are made; and the *strategies* decision makers employ within the confines of institutional features in their attempts to obtain preferred outcomes" (377). In the context of redistricting, party preferences are for seat gains and incumbent protection, but they cannot do both at the same time so they must choose one. The institutional features are the rules governing how the process is to be undertaken (i.e., a commission, through the courts, or through the legislative process) and who is in control of the process (single party control or bipartisan). The strategies have been boiled down to two simple decision rules: (1) if partisan control of the process, then seek partisan gain and (2) if bipartisan control, then compromise on incumbent protection.

It is important not to conflate preference choice with strategy. If we accept that parties have two equally important competing goals when they are drawing districts (i.e., to maximize seats and protect their incumbents), then the two decision rules cannot be true. This is because partisan control is thought to give the party in sole control of the process the ability to draw districts with little outside constraint. If in

situations where parties have the freedom to choose either option they always choose to seek partisan gain (thereby weakening their incumbents), then parties do not have two equally important competing goals. They simply have one goal (seat gain) that is constrained by how much control of the process they have. The redistricting literature does not appear to support this latter claim. Therefore, there is a need for a new theoretical approach to answering the question why parties choose one over the other.

The rational choice approach helps provide good answers in a lot of contexts, but when it comes to preference formation, it has long been recognized that it falls short. For instance, North (2005) writes, "...the rationality assumption fails to deal adequately with the relationship of the mind to the environment" (24). In the context of redistricting it is critically important to understand how parties perceive their options because these perceptions determine their attitude toward risk. As a result, I draw on work in psychology, which cracks the black box of the human mind. Where rational choice glosses over preference formation, psychology wades into the cognitive thicket. As Crenshaw (2002) succinctly puts it, "[o]ne major intellectual contribution of political psychology is explaining how preferences or interests are formed, how they are ranked, the intensity with which they are held, and how they are implemented" (141). In particular, I utilize prospect theory to derive behavioral predictions based on how perception of one's context affects one's willingness to accept risk. Redrawing district lines is a risky proposition for parties. Parties that spread their voters too thin in order to gain more seats risk losing seats rather than gaining them. Thus, understanding a party's risk propensity is critically important if one hopes to understand behavior.

In connecting prospect theory to redistricting one also needs to be keenly aware of the specific context parties find themselves in. Parties sometimes find themselves in sole control of the process, but other times there is bipartisan control. The particular context plays an important role in determining the choices parties face. As a result, behavioral expectations will differ based on who controls the process. Instances of bipartisan control connect very well with traditional prospect theory, while instances of partisan control offer parties more complex choice sets than what prospect theory has to this point dealt with. In the following sections I will first introduce prospect theory. Then I will connect it with congressional redistricting, offering behavioral predictions drawn directly from prospect theory and also predictions based on an extension of prospect theory to the more complex context of redistricting.

### *Prospect Theory*

Prospect theory was originally developed by Kahneman and Tversky (1979) in the 1970s as a response to expected utility theory. The idea is that real people do not behave as rationally as the tenets of expected utility theory predict. Importantly, the insight is not just that people do not behave rationally, but that they behave systematically depending on how they perceive their choices. As a result, how choices are framed becomes the key element in the theory. The frame is determined by the context within which decisions are being made. Thus, the choice context is extremely important. This importance is perhaps best stated by Frohlich and Oppenheimer (2006), "...if context determines which elements enter into an individual's decision

structure, then explanations of behavior require that we identify choice context. Indeed, the experiments that resulted in Prospect Theory...demonstrated that the *stability* of preferences, and hence individual choices, are sensitive to the individual's interpretation of the decision context, and hence, dependent upon the way that the decision problem is framed" (251).

Pointing out that context matters is nothing new, but it is important to recognize that it plays a different role here than when it is referred to in many other works. For example, the congressional literature (which has much of its roots in the rational choice tradition) has had a decades long debate about the relative importance of congressional committees, parties, and the House floor (Cox and McCubbins 1993; Krehbiel 1992; Krehbiel, Shepsle, and Weingast 1987). Context, in these works, is the recognition that there is some heretofore unnoticed obstacle that may prevent individuals or groups from achieving their goal(s). Thus, context is equivalent to a barrier that must be overcome or strategically avoided. From a psychological perspective, context is not about simply identifying potential barriers faced by actors. Context can affect the very goal the actors are going to seek. In other words, context is traditionally viewed as a maze through which actors must navigate in order to reach their finish line. From a psychological perspective, context is also a crucial factor in determining where the finish line is going to be in the first place.

Kahneman and Tversky's prospect theory provides entry into the minds of individuals by helping scholars identify the effect of perception on behavior. It encompasses many separate concepts, but here I will draw on two in particular: (1) the

reflection effect and (2) loss aversion. Both the reflection effect and loss aversion point to the importance of reference points on individuals' choices. In the case of the reflection effect, the reference point determines one's willingness to make risky choices. In the case of loss aversion, the reference point determines which of the many factors being weighed by the decision maker will have the greatest effect on choice. The important contribution is that the choices people make are reference dependent. Thus, it is critically important that scholars identify their subjects' reference point(s).

The reflection effect can best be understood with a simple example. Expected utility theory (EUT) suggests that individuals are indifferent between gaining \$100 with certainty and a lottery with an even chance of gaining either \$0 or \$200. EUT makes the same prediction if individuals are choosing between a certain loss of \$100 and a lottery with an even chance of losing either \$0 or \$200. However, Kahneman and Tversky find that, when faced with the first two choices, individuals find themselves in the domain of gains and are consequently risk averse (i.e. people disproportionately choose a certain gain of \$100 over a lottery). When faced with the second two options, individuals are in the domain of losses and are, thus, risk accepting (i.e. people will disproportionately choose the lottery over the certain loss of \$100).

There have been many experiments following this basic design that find similar results (e.g., Kahneman, Knetsch and Thaler 1991; Slovic and Lichtenstein 1983; Tversky and Kahneman 1986). As a result, we know that attitudes toward risk do not follow the tenets of expected utility theory, but that these attitudes are dependent on perception. That is, one's attitude toward risk depends on whether one perceives oneself to be in

the domain of gains or losses, which results in attitudes that are risk averse and risk accepting, respectively. This finding helps us to refine our understanding of how individuals evaluate and make choices. The behavioral expectations of individuals or groups that find themselves in the domain of gains are risk averse, while those that find themselves in the domain of losses are risk accepting.

However, there is more to prospect theory than just its expectations about risky choices. Tversky and Kahneman (1991) extend this analysis with a specific focus on the important role loss plays in decision making. Their central finding "...is that losses and disadvantages have a greater impact on preferences than gains and advantages" (1039). For example, they demonstrate this with an interesting experiment that asks individuals to imagine that they are finishing up part-time training for a new job. This training varied on two dimensions, (1) social interaction and (2) commute time. It had long periods of isolation and was a 10 minute commute. Now the individual is choosing between two potential full time jobs. The first option is a job that offers limited social interaction and a commute time of 20 minutes. The second option offers moderate social interaction and a commute time of 60 minutes. Thus, the first option offered better social interaction but a slightly longer commute, while the second option offered much better social interaction, but a much longer commute. The expectation is that individuals will choose to minimize their loss rather than maximize their gain. This is, of course, exactly what Tversky and Kahneman find. People disproportionately choose the first option, which minimizes the extra commute time rather than maximizing the gain in social interaction. When Tversky and Kahneman switched the reference point (the

part-time training) to much pleasant social interaction and an 80 minute commute, individuals choose the second option. This demonstrates how individuals place more weight on potential losses than on potential gains.

Taken together, the reflection effect and loss aversion provide scholars with behavioral expectations based on an understanding of how people actually behave. Unfortunately, it is more difficult to utilize psychologically based behavioral expectations than to simply assume rationality. Additionally, what is being proposed in prospect theory goes much further than modifying rationality assumptions through assertions of bounded rationality or satisficing (Simon 1957). Prospect theory moves well beyond the recognition of cognitive capacity limitations and subjective utility curves. The bedrock finding of prospect theory is that how individuals evaluate their options can be significantly altered without adding to, or changing a single piece of an individual's knowledge about the options. Who people vote for, which house they buy, or where they work could all be different not because they lacked information, but because of how they perceived their choices.

### *Connecting Prospect Theory to Congressional Redistricting*

Connecting prospect theory to congressional redistricting provides the answer to this work's motivating question: Why do some parties favor incumbent protection while others favor partisan gain? Prospect theory does this by allowing one to deal directly with the choice between partisan gain and incumbent protection that parties face. The key is to identify the specific context parties find themselves in. Parties will find

themselves in one of two situations, either with unilateral control of the process or with the need to compromise. The interaction between the parties' dilemma and their level of control of the process is crucial.

In order to gerrymander districts, parties can do only one thing—move votes around. Moving voters is an extremely risky endeavor. Being risk averse means the party has chosen to, at a minimum, not change the partisan distribution of voters across the state's districts (i.e., the same parties win the same number of districts by roughly the same margin). But, risk averse can also mean the party seeks to strengthen each party's hold on the state's districts by increasing their margin of victory (i.e., the same party wins the same number of districts by an even greater margin). Risk accepting behavior is just the opposite. Parties seek to reduce the strangle hold that parties have on each district and make them more competitive. In other words, increasing competitiveness is risky, while decreasing it or maintaining the status quo is risk averse.

I refer to this as changing the competitiveness of a state's congressional districts. Shifts in competitiveness, of course, are not simply either/or situations. Parties do not just increase or decrease competitiveness. This is a spectrum that runs from most competitive set of districts on one end (i.e., every district is 50 percent Democrat and 50 percent Republican) to most uncompetitive set of districts on the other (i.e., all districts are either 100 percent Democrat or 100 percent Republican). The important point is that the connection between the party and all the state's districts defines what risky behavior is in this context.

Prospect theory suggests that a party's willingness to accept risk is affected by how they perceive their choices. As a result, this perception has a large effect on how parties resolve their dilemma between gaining seats (risky) and protecting incumbents (safe), which is the same as saying perception affects whether or not parties will increase or decrease competitiveness and by how much. Concern about redistricting's effect on district competitiveness is not new. For example, Carson and Crespin (2004) focus on the effect that the method of redistricting (i.e., court, commission, or legislature) has on the competitiveness of congressional districts. They find that court and commission based redistricting plans produce more competitive races than legislatively drawn plans. However, Abramowitz et al. (2006) find little evidence that redistricting is responsible for a decline in competitive districts when compared to partisan district polarization and the incumbent advantage. Additionally, Dusso (2009) turns the question around and shows that changes to average district competitiveness during redistricting lead to seat gains and losses for the majority party in the short term and long term. None of these works, however, explains why parties choose the risky option to increase competitiveness or the risk averse option to decrease competitiveness.

Figure 3-1  
Party Perception and Redistricting Context

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		Party Perception	
		Domain of Gains	Domain of Losses
Redistricting Context	Single Party Control	1: Risk Accepting	2: Risk Averse
	Bipartisan Control	4: Risk Averse	3: Risk Accepting

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Thinking about congressional redistricting as the interaction between party perception and context allows one to conceive of parties in very specific contexts. Figure 3-1 presents four potential situations parties find themselves in, which vary based on perception and control: (1) The party perceives itself to be in the domain of gains and is in control of the process; (2) The party perceives itself to be the domain of losses and is in control of the process; (3) The party perceives itself to be in the domain of losses and there is bipartisan control of the process; (4) The party perceives itself to be the domain of gains and there is bipartisan control of the process.

Predictions may appear simple at this point since traditional prospect theory predicts that the domain of gains leads to risk averse behavior (less competitive districts), while the domain of losses leads to risk accepting behavior (more competitive districts). But this does not take into account the choices specific contexts afford parties. Before one can make precise predictions, one must first identify the specific

context. In the context of congressional redistricting, whether or not the party is in control of the process affects the available options. Partisan control presents parties with the option to either protect their incumbents or maximize seats (boxes 1 and 2 in Figure 3-1). Bipartisan control, however, eliminates maximizing seats as an option. As a result, one needs to treat these contexts separately (boxes 3 and 4 in Figure 3-1).

Parties in bipartisan situations do not face the classic parties' dilemma because they cannot maximize their seats. They can only hope to protect their incumbents. Therefore, the risk to them does not come from a competing desire to win more seats. The risk is only in the possibility of losing incumbents. This simplifies the parties' choices and connects quite nicely with traditional prospect theory's loss aversion (i.e., seeking to minimize loss rather than maximize gain). With this singular concern, parties in the domain of gains can be expected to be risk averse (box 4) while parties in the domain of losses will be risk accepting (box 3). The result is that parties in the domain of gains will push further in the direction of decreased district competition than parties in the domain of losses. Risk accepting in this context does not mean that they are going to attempt to win more seats by increasing competitiveness, but simply that they will not push for greater security, which is (from the perspective of protecting incumbents) more risky.

Redistricting contexts where parties find themselves in control of the process present us with a more complex problem (boxes 1 and 2 in Figure 3-1). It is in these situations that parties are torn between their competing goals. These competing goals do not fit so easily in the classic prospect theory world. The key difference in this

situation is that the party faces two components in their decision making process, which are traditionally thought of separately in prospect theory. That is, they face both a loss aversion component and a reflection effect component. The loss aversion component comes from the desire to protect their incumbents, while the reflection effect component comes from their risky desire to maximize their seats. The challenge here is understanding how these two effects interact.

In earlier work I have identified how they interact through an experiment designed to test the effects on perception of the more complex real world of congressional redistricting (Dusso 2008). In it I present subjects with questions that have choices that cross traditional prospect theory questions designed to demonstrate the reflection effect with prospect theory questions that are designed to demonstrate loss aversion. For example, the subject is asked to choose between (1) a new redistricting plan that gives a .455 probability of winning(losing) 11 seats with 4 guaranteed wins(losses) and (2) a second plan that gives a .273 probability of winning(losing) 11 seats and 6 guaranteed wins(losses). When using win terminology, the majority (60 percent) chose the first plan. When using loss terminology, the majority (58 percent) chose the second plan. The results of this work suggest that individuals who perceive themselves to be in the domain of losses and facing a choice containing a loss component (i.e., giving up guaranteed wins) and a risky component (more competitive districts) will be risk averse. Individuals who perceive themselves to be in the domain of gains in this same situation will be risk accepting.

This result flips what has been traditionally understood in prospect theory with regards to one's domain and risk propensity. What the experiments demonstrate is that when coupled with loss aversion, concerns about riskiness take a back seat to concerns about minimizing loss. Thus, in the experiments, individuals in the domain of gains chose the risky choice because they were seeking the option that minimized their potential loss from the status quo. In the real world of congressional redistricting, parties in the domain of gains are strong and focus on the seats they can win, which means simply protecting incumbents is a loss. In order to avoid that loss, they choose the riskier option to increase the state's average district competitiveness. When parties are in the domain of losses, they are weaker and thoughts of seat gains are swept aside by the fear of losing what they currently control. Therefore, they choose the risk averse route and decrease average competitiveness in the state

This produces clear behavior predictions for situations where parties have unilateral control. It also answers the question why some parties choose to protect their incumbents while others seek to gain more seats. The answer lies in how the party perceives its current position. When parties perceive themselves to be in the domain of gains and they are in control of the redistricting process, they will be risk accepting. This means they will seek to increase the competitiveness of the state's congressional districts. That is, parties in the domain of gains will tend to favor seat maximization. When parties perceive themselves to be in the domain of losses and are in control of the process, they will be risk averse. This means they will make the state's districts less competitive. That is, parties in the domain of losses will favor incumbent protection.

The connection of prospect theory to congressional redistricting produces the following four hypotheses:

*Hypothesis 1:* Parties in the domain of gains and in control of the process will be risk accepting and, therefore, seek to increase the average competitiveness of their state's congressional districts.

*Hypothesis 2:* Parties in the domain of gains and not in control of the process will be risk averse and, therefore, seek to decrease the average competitiveness of their state's congressional districts.

*Hypothesis 3:* Parties in the domain of losses and in control of the process will be risk averse and, therefore, seek to decrease the average competitiveness of their state's congressional districts.

*Hypothesis 4:* Parties in the domain of losses and not in control of the process will be risk accepting and, therefore, seek to increase the average competitiveness of their state's congressional districts.

## **Data and Methods**

I develop a model of congressional redistricting that utilizes observational data from the last three redistricting cycles (1980s, 1990s, and 2000s). This model contains three key measurements. First is my dependent variable, which is a measure of change in the competitiveness of a state's congressional districts pre and post redistricting. Second are proxy variables indicating a party's psychological disposition. These variables

are context specific and suggest whether or not a party will find itself in the domain of gains or losses. Third is an indicator of who is controlling the redistricting process.

### *Dependent Variable*

Measuring change in congressional districts due to redistricting is nothing new. However, I need to approach this measure from a different perspective than has conventionally been employed. The theoretical discussion above conceives of a state's congressional districts not as individual units but as a set; changes in one district affect the others. Parties that are seeking partisan gain will increase the competitiveness of a state's districts *on average*.<sup>6</sup> Parties that are seeking to protect their incumbents will, at a minimum, maintain the status quo, but more likely decrease the competitiveness of the state's districts *on average*. Therefore, what is needed is a new measure of change in the competitiveness of a state's congressional districts.

This measure needs to be more than a simple dummy indicating competitive or not (e.g., Carson and Crespin 2004; Cox and Katz 2002; Jacobson 2004). The competitiveness of states' districts is a continuous variable that goes from a situation where every district is split evenly between the parties on one end to a situation where every district is a 100 – 0 blowout. Of course, neither of these hypothetical situations is ever likely to occur. The important point is that it is not an either/or situation and there does not need to be any indication of which party controls the districts. The spectrum is party neutral.

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<sup>6</sup> This change may affect only a small number of the state's districts, but *on average* they will have become more competitive.

Perhaps the most common measure of a district's partisanship is to use each district's presidential vote. Butler and Cain (1992) point to particularly poor performing Democratic presidential candidates, such as Carter in 1980 and Mondale in 1984, as good loyalty measures. Ansolabehere, Snyder, and Stewart (2000) use presidential vote as their base for comparing old and new voters. In fact, using presidential vote as a measure of a district's partisanship has a long history (see for example, Cain and Campagna 1987; Converse 1966; Erikson 1971; Erikson and Wright 1993; McAdams and Johannes 1988). Banducci and Karp (1994) look at partisan change in the district by comparing presidential vote in 1988 aggregated to the old and new districts. Other scholars have used the occurrence of redistricting as a natural experiment to demonstrate how representatives change their voting behavior to match changes in their districts ideological composition, with presidential vote used as a baseline measure of a district's partisanship (Glazer and Robbins 1985; LeVeaux-Sharpe 2001).

In order to create my dependent variable, I follow in this line of work and utilize districts' presidential vote. First, I find the Democrat and Republican percent of the vote for each district and then calculate the gap between these two values. The size of this gap gives a measure of how competitive each district is in a state. I then average this number across all of the state's districts, which gives me a measure of the average competitiveness of a state's districts. I utilize results from the presidential election prior to redistricting (Niemi and Winsky 1992). I do this for last the three redistricting cycles

(1980 presidential results for the 1980s cycle, 1988 results for the 1990s cycle, and 2000 for the 2000s cycle). This produces a measure of competitiveness prior to redistricting.<sup>7</sup>

Second, I need to find competitiveness after redistricting. One way to do this would be to find the presidential vote in the first election after redistricting, but this introduces a potential problem. The vote is being taken from elections four years apart. In such situations, changes in vote may be the result of things other than changes in the district's boundaries (e.g., different candidates or shifts in the partisan tide).<sup>8</sup>

Fortunately, an alternative has been provided by Congressional Quarterly.<sup>9</sup> CQ produces estimates of how a state's new districts would have voted had they been in place during the prior presidential election (for other works using these estimates see Gopian and West 1984; Ostdiek 1995; and Swian, Borrelli, Reed 1998). For example, CQ takes the new district boundaries in place during the 2002 presidential election and estimates how those districts would have voted during the 2000 presidential election.

This results in two numbers for each state. First is the measure of competitiveness based on the actual presidential vote in the state's districts, which is the pre-redistricting value. This value ranges from an average gap of 3 percent in Maine to an average gap of 52 percent in Utah. Second is a measure of competitiveness based on the estimated presidential vote in the state's districts, which is the post-redistricting

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<sup>7</sup> Congressional district voting data obtained from *The Almanac of American Politics* (Barone and Cohen 1982, 1990, 2002)

<sup>8</sup> One alternative is to use the normalized presidential vote (Abramowitz, Alexander, and Gunning 2006), which subtracts the vote the Democratic candidate received nationally from the vote the Democratic candidate received from the district. While this does obviate the problem of cross election comparison of the partisan makeup of a district, it does not help the present analysis because I need to find the gap between the district's Democratic and Republican vote.

<sup>9</sup> In Congressional Quarterly's *Congressional Districts in the 1980s, 1990s, and 2000s*.

value.<sup>10</sup> This ranges from an average gap of 2.5 percent in Hawaii to a 53 percent gap in Utah. Creating the change in a state's districts measure, then, is a simple matter of subtracting the post value from the pre value. This variable takes on a theoretical range from negative 100 to positive 100 (i.e., going from a gap of 0 to gap of 100 or gap of 100 to a gap of 0), but the data's actual range is from -13 to 4.7.

To be clear, positive changes in the dependent variable mean the districts are more competitive, on average, and parties chose the riskier option. Negative changes mean districts are less competitive, on average, and parties chose the risk averse option. Looking at changes during the last round of redistricting in California provides an illustrative example. They chose to decrease the average competitiveness of districts by 1.35 percent. Of course, this resulted in such safe seats that Governor Schwarzenegger called for wholesale changes in how redistricting was done in California. This spawned the ballot measure Proposition 11, which passed with 50.8 percent of the vote and now California will use a 14 person commission during the next round of redistricting.

### *Independent Variables*

The model's key independent variables are context specific measures. First are two proxy variables designed to tap the psychological disposition of the parties. Second

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<sup>10</sup> Producing these two values at the level of the state rather than focusing directly on individual districts has the added value of avoiding the problem of connecting pre districts with post districts directly. That is, states give their districts numbers, but the numbers have no real meaning. Thus, measuring change by attempting to connect Missouri's 1<sup>st</sup> district prior to redistricting with Missouri's 1<sup>st</sup> district after redistricting can run into significant problems because the numbers being applied to Missouri's set of districts do not have to have any connection to how they were applied in the past. This problem is exacerbated when states lose or gain seats through reapportionment.

is a measure of redistricting control. These three variables' interactions form the heart of this analysis. The model also contains several control variables.

The first set of key independent variables are proxy variables measuring the disposition of the political parties. The theoretical argument derived from prospect theory is that parties in the domain of gains will behave systematically differently than those in the domain of losses. Thus, measuring the psychological disposition of the parties is crucial to this analysis. Unfortunately, I cannot examine the parties directly through a questionnaire or the use of an fMRI machine. Therefore, I have chosen two separate context variables that work as proxies.

The first proxy is a measure of the majority party's strength. This is the proportion of seats the majority party holds in the state legislature (Dubin 2007). In this case, the majority party is defined as the party that controls at least two of the three major state government institutions, i.e., the state house, state senate, and governorship. The second proxy variable is connected to how reapportionment affects the state's number of districts. This produces two dummy variables. The first is a dummy coded as 1 if the state's number of districts stayed the same and 0 otherwise. The second is a dummy coded as 1 if the state's number of districts increased and 0 otherwise. In this case, when interpreting these variables, states that lost seats become the reference category.

The third key independent variable is a dummy indicating whether or not a single party had unilateral control of the redistricting process (coded 1 if unilateral control and 0 otherwise). This is based on coding by Abramowitz (1983) for the 1980 round of

redistricting, Niemi and Abramowitz (1994) for the 1990 round, and McDonald (2004) for the 2000 round. This variable is interacted with each of the disposition proxy variables.

By interacting the partisan control variable with the measure of party strength and the two dummies indicating whether or not a state lost seats or stayed the same after reapportionment, I am able to identify specific party contexts and, thus, present clear behavioral predictions. These contexts connect with the theoretical discussion in the previous section. Recall, parties find themselves in one of four potential situations (see Figure 1): (1) The party perceives itself to be in the domain of gains and is in control of the process; (2) The party perceives itself to be the domain of gains and is in control of the process; (3) The party perceives itself to be in the domain of losses and there is bipartisan control of the process; (4) The party perceives itself to be the domain of losses and there is bipartisan control of the process.

First I will focus on contexts where there is partisan control of the redistricting process (situations 1 and 2 above). Situations like this are captured in the model in the following interaction terms: (1) *partisan control x majority party strength*, (2) *partisan control x state gained seats*. The theory indicates that parties in control and in the domain of gains will be risk accepting and thus increase the competitiveness of the districts. Based on how these two variables are coded, one should expect a positive sign on these coefficients.

Majority party strength and whether or not a party gained seats also provide for an interesting way of examining the different ways one might derive proxy variables for

psychological dispositions. In prospect theory, one's psychological domain is often spoken of in an either/or manner. That is, one is either in the domain of gains or in the domain of losses. The variable indicating whether or not a state gained seats is very similar to this way of looking at the problem, in that it is also a dummy variable. However, the majority party strength variable is not dichotomous. It is a continuous variable indicating the percent of seats held by the majority party in the state legislature. This variable suggests that there can be variance with regard to one's domain, i.e., there are degrees of being in the domain of gains or losses. Thus, the interaction between partisan control and majority party strength indicates that the greater the percentage of seats the party holds, the more in the domain of gains the party is (or the less in the domain of losses the party is, depending on where on the scale the party starts).

Contexts where there is bipartisan control are also captured in the model (situations 3 and 4 above). Inclusion of interaction terms in a model necessitates the independent inclusion of each of the interaction's parts, i.e., (1) *majority party strength*, and (2) *whether or not a state gained seats*. These variables also provide very specific redistricting contexts from which one can test the earlier theoretical expectations. Majority party strength indicates a situation where there is bipartisan control of the process.<sup>11</sup> Being in the domain of gains with bipartisan control should cause parties to be risk averse. Thus, the expectation is a negative coefficient. Majority party gained

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<sup>11</sup> This is because when a model includes interactions of two variables such as  $X$  and  $Y$ , the value of the coefficient on  $X$  is the effect of  $X$  on the dependent variable *when*  $Y$  equals zero. Thus, in this context the meaning of the effect of the majority party strength variable is the effect on the dependent variable when partisan control equals zero, which means bipartisan control.

seats is also a variable where the context is bipartisan control of the process. This coefficient should also be negative. This means that parties in states that gained seats and had bipartisan control of redistricting are more likely to decrease the average competitiveness of their districts than parties in states that lost seats with bipartisan control.

The variables (1) *majority party strength*, (2) *state gained seats*, (3) *majority party strength x partisan control*, and (4) *state gained seats x partisan control* form the core of this analysis. These four variables test the above four hypotheses and have clear expectations associated with them. In addition to these key variables, the model also includes several control variables. First, because the dependent variable is a measure of change in the competitiveness of a state's districts, the first control variable is the starting measure of a state's average district competitiveness. This is included because how skewed one way or the other a state's districts are to begin with could influence how much parties can change the districts. For example, if a state's districts are already extremely competitive, it makes it difficult for parties to increase this competitiveness further.

The second and third control variables are dummies indicating the redistricting cycle (1 if 1980s and 0 otherwise and 1 if 2000s and 0 otherwise, the 1990s is dropped and becomes the reference category). This is necessary because the model pools data from three separate decades. The fourth and fifth control variables are also dummy variables indicating how the state conducts redistricting. These are coded 1 if it uses a commission and 0 otherwise, and coded 1 if it uses the courts and 0 otherwise.

Instances where the state relies on the state legislature become the reference category.<sup>12</sup> These variables are included because there is evidence that the method used may affect district competitiveness (Carson and Crespin 2004, McDonald 2004).

The sixth control variable is a dummy indicating that the number of congressional districts a state has stayed the same (1 if stayed the same and 0 otherwise). The seventh control variable is an interaction of the dummy indicating the state's number of districts stayed the same with partisan control. These last two variables are necessary in order to isolate the other key variables associated with reapportionment, i.e., gaining seats and losing seats (and their interactions). In this case losing seats and losing seats x party control are dropped and become the comparison group.

The eighth control variable is the variable indicating partisan control of redistricting. This is a necessary inclusion due to the interaction terms. The substantive meaning of this variable is partisan control of the process, while the majority party controls zero percent of the seats in the state legislature and the state has lost seats due to reapportionment. The final control variable is a dummy indicating whether or not the state is required to submit its redistricting plans to the Justice Department for preclearance. This requirement has the potential to limit the ability of parties to move their voters as they would most prefer (Forgette and Winkle 2006).<sup>13</sup>

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<sup>12</sup> Court or Commission used to draw districts variable based on Carson and Crespin (2004) for the 1990s, Campagna and Grofman (1990) for the 1980s and McDonald (2004) for the 2000s.

<sup>13</sup> I code only states where all or most of the states is subject to preclearance (AL, AZ, GA, LA, MS, SC, TX, VA). There are states with specific counties or townships that are also required to get preclearance (CA, FL, NY, NC, SD, MI, NH), but not the entire state. These states are coded as 0 with states not requiring any preclearance.

The resulting model is as follows:<sup>14</sup>

$$\begin{aligned} \Delta \text{ Average District Competitiveness} = & \beta_0 - \beta_1 \text{ Majority Party Strength} + \beta_2 \text{ Majority Party} \\ & \text{Strength} \times \text{Partisan Control} - \beta_3 \text{ State Gained Seats} + \beta_4 \text{ State Gained Seats} \times \\ & \text{Partisan Control} + \beta_5 \text{ Partisan Control} + \beta_6 \text{ States' Ave. Starting Comp.} + \beta_7 \\ & \text{State's \# of Dist. Same} + \beta_8 \text{ State's \# of Dist. Same} \times \text{Partisan Redistricting} + \beta_9 \\ & \text{Cycle 1980} + \beta_{10} \text{ Cycle 2000} + \beta_{11} \text{ State Uses Commission} + \beta_{12} \text{ State Uses Courts} + \\ & \beta_{13} \text{ State Needs Preclearance} + \mu \end{aligned}$$

## Results

Table 3-1 presents results after estimation of an OLS regression. The first two variables (*Majority Party Strength* and *Majority Party Strength x Partisan Control*) present the first test of the four hypotheses. The variable *Majority Party Strength* tests the effect of increasing the percent of seats held by the majority party during bipartisan control. This variable tests hypotheses 2 and 4 and lends support to both. The stronger the party perceives itself to be, the more competitiveness decreases on average after redistricting. Or, put another way, the weaker the party perceives itself to be, the more competitiveness increases on average. The interaction variable, *Majority Party Strength x Partisan Control*, tests hypotheses 1 and 3. It too reaches conventional levels of significance indicating that the stronger the party perceives itself to be when it has control of the process, the more competitiveness increases on average.

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<sup>14</sup> Scholars of congressional redistricting may question the abstract nature of this model, as the actual process of redistricting is full of colorful characters and parties with varying goals and plans and constraints specific to their states, parties, and times. This I do not deny, but to the extent that these instances are important in the process in general, they should serve to make it much more difficult for this model to find significant results. Thus, I am all the more confident in the significant results that I do find.

Table 3-1

Predicting Change in the Average Competitiveness of States' Congressional Districts After Redistricting

Variable	Estimate	Robust Std. Error
<i>Key Variables</i>		
Majority Party Strength	-5.96*	3.17
Majority Party Strength x Partisan Control	5.99*	3.55
State Gained Seats	-2.47**	0.89
State Gained Seats x Partisan Control	0.79	1.23
<i>Control Variables</i>		
Partisan Control	-3.86*	2.30
States' Competitiveness Prior to Redistricting	0.03	0.02
# of Districts in State Stayed the Same	-0.38	0.51
# of Districts Same x Partisan Control	0.43	1.00
1980s Redistricting Cycle	1.10*	0.63
2000s Redistricting Cycle	0.93	0.56
State Used Commission	-0.31	0.37
State Used Court	-0.61	0.63
State Needs Preclearance	-0.84*	0.46
Constant	2.94	1.77

Estimates after running an OLS regression with clustering on states

N = 125, R<sup>2</sup> = 0.25, \* = p < .05, \*\* = p < .01

The second set of variables (*State Gained Seats* and *State Gained Seats x Partisan Control*) presents a second test of the four hypotheses. Just as with the variable *Majority Party Strength*, the variable *State Gained Seats* represents situations where there is bipartisan control and the interaction represents situations where there is partisan control of the process. The variable *State Gained Seats* tests hypotheses 2 and 4 and is highly significant with the expected sign. This means that parties in states that gain seats are significantly more likely to decrease the competitiveness of the state's

districts than parties in states that lose seats when there is bipartisan control of the process. The interaction variable, State Gained Seats x Partisan Control, tests hypotheses 1 and 3, but does not reach conventional levels of significance.

Taken together, the four key variables provide strong support for the theoretical expectation that parties' willingness to accept risk is affected by how they perceive their strength. Their risk propensity then leads to predictable behavior, given their choices (i.e., do they face the classic redistricting dilemma or not). Until now the belief among scholars has been simply that partisan control leads to gerrymandering and bipartisan control leads to incumbent protection.<sup>15</sup> The results presented here demonstrate that the decision making of parties is more complex than commonly assumed and, more importantly, that their attitudes toward risk are not static.

Additionally, three of the control variables reach significance. First, Partisan Control reaches significance. This variable indicates the value of partisan control when the majority party controls zero percent of the seats in the state legislature and the state had lost seats. Of course, controlling at least one of the branches of the state legislature without having any seats does not make substantive sense, but the sign and significance are as the theory would predict. Parties in control of the process face the classic dilemma. When they are in the domain of losses (which zero state legislative seats and losing seats to reapportionment would surely put them), they become risk averse. Thus, they reduce the competitiveness of state's districts. Second, the dummy

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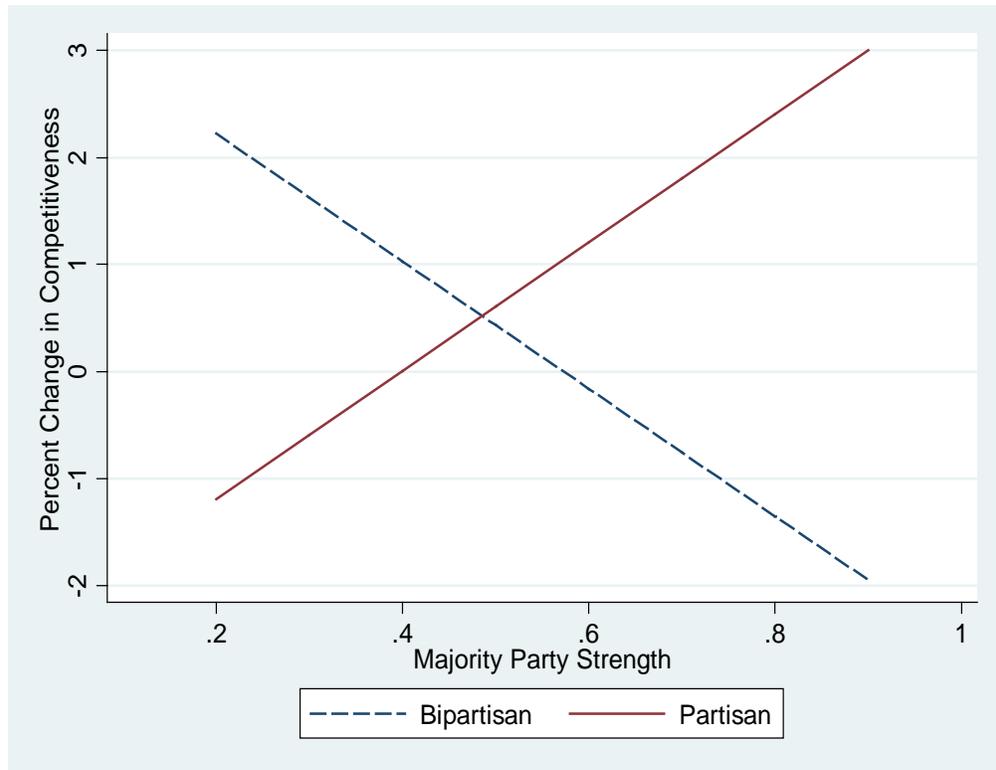
<sup>15</sup> Running the regression again, but dropping the Majority Party Strength and State Gained Seats variables, provides a test of the simpler theory that partisan control leads parties to attempt to gerrymander districts in order to win more seats (i.e., increase competitiveness). In this case partisan control does not reach conventional levels of significance.

variable indicating the 1980s round of redistricting is also significant. This indicates that parties during the 1980s round of redistricting were significantly more likely than parties during the 1990s round to increase the competitiveness of their state's congressional districts. Third, the dummy variable indicating that a state needs to submit its redistricting plan for preclearance also reaches significance. This result suggests that the preclearance requirement contributes to a reduction in average competitiveness in states requiring it.

Figure 3-2 presents a graphical look at the substantive meaning of changes in majority party control in the state legislature. As this is an OLS model, the coefficients can be meaningfully interpreted directly and Figure 2 clearly shows how changes in the percent of seats held by the party affect changes in competitiveness, holding all else constant. When there is partisan control of the process, for every ten percent increase in the number of seats, the percent change in competitiveness goes up by .6 percent (meaning that the average gap between Democrats and Republicans goes down by .6 percent). When there is bipartisan control of the process, for every ten percent increase in the number of seats controlled by the majority party, the percent change in the competitiveness goes down by .6 percent (meaning that the average gap between Democrats and Republicans goes up by .6 percent).

Figure 3-2

Predicted Change in Competitiveness Given Level of Majority Party Strength and who Controls the Process



The percent changes in Figure 3-2 may appear to be small, but recall that the actual range of the dependent variable is -13 to 4.7. The stark contrast between what one would expect to see happen when there is a party that perceives itself to be in the domain of gains versus a party that perceives itself to be in the domain of losses is striking. A shift from being strongly in the domain of gains to strongly in the domain of losses shifts party behavior by about four percent (regardless of partisan control), which is 23 percent of the dependent variable's range. States gaining or losing seats tells a

similar story with a similar effect. Given bipartisan control, the difference between gaining seats (domain of gains) and losing seats (domain of losses) is 2.47 percent or 14 percent of the dependent variable's range.

## **Conclusion**

While the key variables utilized in this model point to observable phenomenon, it is important to remember that these are proxy variables designed to measure something unobservable, i.e., perception. The difficulty with utilizing psychological concepts to explain real world behavior is that these concepts almost always need to be imputed. This work is no different. Building on prospect theory, I have developed four hypotheses regarding how perception will drive behavior, which depends on the choices available to parties.

The results indicate that how parties solve their redistricting dilemma depends on how they perceive their situation. When they have control of the process, the further they move into the domain of gains, the more they will seek to increase the competitiveness of their state's congressional districts. When the process is bipartisan, the further they move into the domain of gains, the more they will seek to decrease the competitiveness of their state's congressional districts. Importantly, these are not trivial results without real world implications. Dusso (2009) demonstrates that changes to average district competitiveness lead to seat gains and losses for the majority party in the short term (first election after redistricting) and long term (last election of redistricting cycle).

Beyond congressional redistricting, these results suggest the tremendous potential for utilizing psychologically based theories to explain elite behavior. We do not need to rely simply on the rationality assumption. Additionally, it suggests that we do not have to accept the psychological theories just as they have been handed to us from other disciplines. By tailoring the theory to the context, we can not only provide more precise predictions for our own work, but help to expand the original theory at the same time.

## Chapter 4: Gerrymanders, Dummymanders, and the Importance of Changes in District Competitiveness

In the spring of 1991 Virginia Democrats found themselves with a dilemma. They controlled both branches of the state legislature and they held the governorship. Due to large growth in Virginia's Washington D.C. suburbs, the state would be apportioned an additional congressional district, bringing the total to eleven. Thus, the opportunity appeared ripe for the party to increase its congressional delegation, which stood at six after the 1990 elections. However, as one of the states required by the Voting Rights Act to submit its districting plans to the Justice Department for preclearance, minority rights groups including the NCAAP, ACLU, and Southern Christian Leadership Conference saw this as an opportunity to create one or more majority-minority African-American districts. The problem, of course, for Democrats was that they had relied on these voters in multiple districts and packing them into just one or two would significantly weaken their other incumbents. Smelling blood in the water, Republicans had begun working with and promising support to minority groups seeking this goal (Glasser 1991). Ultimately, the Virginia Democrats passed a new districting plan with Justice Department consent and against a unanimous Republican opposition that created one majority-minority African-American district (Dunne 1992).<sup>16</sup>

The fact that Virginia Democrats were able to pass a new districting plan despite Justice Department constraints and against strong Republican opposition suggested that

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<sup>16</sup> The Supreme Court in *Moon v. Meadows* (1997) upheld without comment a lower court ruling that deemed this district unconstitutional as a violation of the equal protection clause. As a result, the state was forced to re-draw this district prior to the 1998 election, which it did, reducing the African-American population from 61.6 percent to 50.5 percent. This did not have an effect on Representative Robert C. Scott who won reelection.

the future for Virginia Democrats in Congress was bright. This proved to be true in the short term as Democrats held seven of Virginia's eleven districts after the 1992 elections; one more than they held prior to redistricting. However, by the close of the 2000 elections, the state's Democrats were left with just three seats, despite the high expectations of the party and pundits. This failure on the part of Virginia Democrats leaves scholars with unanswered questions: Why were both parties so wrong about the political implications of the districting plan passed in 1991? And more generally, how capable are parties of producing durable gerrymanders?

Identifying a connection between redistricting and seat gains and losses has long been the focus of scholars. This appears to be a declining art, however, as the number of works attempting to find a generalizable effect on seats has dwindled. This work, along with the myriad of other works concerned with redistricting, has laid a solid foundation of knowledge about the redistricting process, but there is still much left to do. I argue that there are two important areas of the redistricting process that have yet to be fully explored that can help provide a more nuanced understanding of the circumstances that lead to both party success and failure. These two areas are (1) the importance of bipartisan redistricting processes and (2) the changes to district competitiveness that these processes produce. The present analysis takes the first steps toward filling this hole. In order to do this, I take a new approach to addressing the connection between redistricting and seat gains or losses that consists of four parts.

The first part is a methodological shift. The set of potential redistricting outcomes for parties is quite simple; they will gain seats, lose seats, or stay the same.

As a result, I build two choice models of redistricting. Choice models allow for the inclusion of multiple potential outcomes and therefore are more accurate representations of the real world phenomenon in question. This is a significant departure from past work that tends to focus simply on gaining seats. The advantage is that with a choice model one can parse the effects of variables on the likelihood of all three potential outcomes in the same model. This is critically important if one hopes to understand the causes of seat gains or losses.

Second, I take a step away from the narrow focus on the effects of redistricting when a single party has sole control of the process. In order to do this, I produce a new dependent variable. This new measure allows for a more complete exploration of the effects of bipartisan redistricting. To this point, bipartisan redistricting's effect on seat gains has rarely been the focus of inquiry. This is the case because past work utilized descriptive statistics rather than multivariate analysis (e.g., Abramowitz 1983, McDonald 2004, Niemi and Abramowitz 1994, Niemi and Winsky 1992, Ostdiek 1995). If one wants to understand the effect of partisan or bipartisan redistricting on seat gains, one needs to produce a dependent variable that separates seat gains from who may or may not control the redistricting process. To that end, I measure seat gains or losses for the majority party in the state regardless of control. In doing so, I am able to remove control of the process from the left side of the equation.

Third, I devise a new explanatory variable that taps changes made during redistricting to district competitiveness. These changes are rarely incorporated in models explaining seat gains. This measure is also different than how district

competitiveness has traditionally been conceived. It measures changes to average district competitiveness at the state level rather than the district level. Dusso (2009) demonstrates how changes in average district competitiveness during redistricting are dependent on a parties' willingness to accept risk. Strong parties in sole control of the process are risk accepting and thus increase competitiveness, while bipartisan controlled situations are just the opposite with strong majority parties leading to decreases in competitiveness. I build on this work and show how changes to average district competitiveness during bipartisan redistricting lead to seat gains for the majority party both in the short term and long term.

Fourth, the redistricting literature is broad, in that it touches on many different explanatory variables, yet it is also very thin, in that it is typically the case that these variables' importance is demonstrated in just one or a few articles. I seek to synthesize the many disparate strands of the literature by drawing together these other important variables into both a short term and long term model. These variables include the importance of the method used by the state (legislature, commission, or courts), whether or not the state was reapportioned (gained seats, lost seats, or stayed the same), and whether or not the state is required to get preclearance from the Justice Department. By incorporating these variables in the same multivariate model, I am able to determine their independent effects.

In sum, with this approach I demonstrate how many of the traditional variables thought to be an important influences on seat gains either fail to have a significant independent effect (e.g., partisan control of the process) or are only important in the

short term (e.g., the method each state uses), while changes in district competitiveness have both a short term and long term effect on seat gains. Additionally, I show how bipartisan redistricting, which receives comparatively little attention from scholars, plays a large role in determining who gains and who loses.

### **Gerrymander or Dummymander?**

There is no shortage of attempts to connect partisan control of redistricting to seat gains. After each new round of redistricting, scholars assess the short term effect on seats. Works on the 1970s, 1980s, 1990s, and 2000s have found that the party in control of the process gained seats (Abramowitz 1983; Cain 1984; McDonald 2004; Niemi and Winsky 1992; Squire 1995). Born (1985) goes beyond a single cycle and looks at redistricting from 1952 through 1982. He finds that partisan control does produce advantages for the controlling party, but that these advantages are decreasing over time. The story is not so simple, however, as there have also been works showing that parties in control did not gain an advantage from it (Niemi and Abramowitz 1994; Squire 1985; Swain, Borrelli, and Reed 1998). Additionally, there is strong evidence that any advantage that may have been gained by parties is quickly lost after two or three elections (Basehart and Comer 1991; Niemi and Winsky 1992). All told, the results of work attempting to connect control of redistricting to seat gains are decidedly mixed.

Work focused on how redistricting affects bias towards one party rather than another also comes to conflicting conclusions. Many scholars believe that redistricting does have an effect (Abramowitz 1983; Born 1985; Cranor et al. 1989; Erikson 1972;

Gopoian and West 1984; Hacker 1963; Niemi and Winsky 1992), while many others argue that it has little to no effect (Bullock 1975; Cain 1985; Campagna and Grofman 1990; Ferejohn 1977; Glazer et al. 1987; Niemi and Jackman 1991; Scarrow 1982). For example, Gelman and King (1994) find that partisan bias is rarely more than 8 percent and that “on average, redistricting makes the typical state’s electoral system fairer....Thus, no matter how fair or biased the electoral system is to begin with, the typical redistricting plan, whether Democratic, Republican, or bipartisan-controlled, will produce a fairer electoral system” (550-551).

Part of the problem with much past work is that it often fails to recognize that producing a partisan gerrymander is easier said than done. This is not the case simply because of political obstacles like courts or getting Justice Department pre-approval, but because predicting the future is hard. That is, all else equal, parties in control of the process need to predict their future for the next ten years in order to produce a successful partisan gerrymander. In addition, parties have conflicting goals when it comes to redistricting. It is not simply a matter of trying to gain seats, they are also interested in protecting their incumbents. Thus, parties in control have to wrestle with the desire to both gain and protect, which pulls them in two different directions.

Grofman and Brunell (2005) speak directly to the central problem parties face, i.e., uncertainty about the future and the failure that comes from being too bold or not bold enough. The carrying capacity of a party’s votes in any particular state is limited. Therefore, parties must be smart in how thin they cut up their supporters. Failure of party leaders to understand just how far their support can be stretched leads to what

the authors call a dummymander. In their analysis of the 1990s round of redistricting, they “argue that the partisan effects of redistricting mistakes made by Democrats in the South alone mattered enough to have affected partisan control of the House....If only the Democrats had been brave enough to seize the nettle and concede a number of seats to the Republicans by making them very safe Republican seats, and then done a better job in distributing the remaining Democratic voting strength they would have been in much better shape” (197).

Stories of redistricting failures and mistakes are quite common. California’s Democratic legislature in 1971 passed a new districting plan that was vetoed by Republican Governor Ronald Reagan. This set in motion a process by which a group of three retired justices were appointed as Masters in order to draw up new districts. The result was a set of districts that may have been even more favorable to the state’s Democrats (Butler and Cain 1992). Iowa Republicans in the 1970s attempted the ultimate partisan gerrymander by giving themselves a small advantage in all six of the state’s districts, but after a shift in voter opinion found themselves on the losing side 5-1 (Morrill 1981).

Another example of redistricting failure comes from Florida during the 1980s. The Democrats controlled the redistricting process in 1981 and had won 11 of Florida’s 15 congressional seats in 1980 prior to drawing new districts. Reapportionment awarded Florida 4 additional congressional districts after the 1980 census bringing their total to 19. This would appear to be the perfect opportunity for Florida Democrats to lock in an even larger number of seats. The Democrats were moderately successful in

1982 (the first election with new districts), winning a total of 13 seats, 2 more than they had in 1980. However, the 1980s were not kind to Florida’s Democrats. At decade’s end, they controlled only 9 of Florida’s 19 congressional districts. This is two fewer than they controlled prior to redistricting in 1981 even though the state gained 4 seats through reapportionment.

Table 4-1

States with Single Party Controlled Redistricting

*Part A:* Comparing the number of seats won by party in control immediately prior to and after drawing new districts (percent of total in parentheses).

	<u>Total</u>	<u>Won Fewer</u>	<u>Won More</u>	<u>Stayed the Same</u>
1980-82	22	3 (14)	7 (32)	12 (55)
1990-92	19	5 (26)	4 (21)	10 (53)

*Part B:* Comparing the number of seats won by the party in control immediately prior to drawing new districts with the number won 10 years after redistricting (percent of total in parentheses).

	<u>Total</u>	<u>Won Fewer</u>	<u>Won More</u>	<u>Stayed the Same</u>
1980-90	22	8 (36)	7 (32)	7 (32)
1990-00	19	13 (68)	1 (5)	5 (26)

Party control of the redistricting process based on coding by Abramowitz (1983) and Niemi and Abramowitz (1994)

Table 4-1 further illustrates the difficulty parties appear to have when given the opportunity to gain more seats through a partisan gerrymander. Part A presents a simple count of how parties fared in the short term when they controlled the

redistricting process. These results cast doubts on the parties' ability to gain an advantage from redistricting. Even when they have complete control over the process during the 1980s and 1990s, they manage to gain seats in the short term just 27 percent of the time. In fact, they manage to lose seats nearly as often (20 percent of the time). Part B compares how parties in control of redistricting did immediately prior to implementing the new districts versus ten years later. Again, these numbers paint a bleak picture for parties in control of redistricting. Just 20 percent of the time they are better off and 51 percent of the time they are worse off. In fact, even when the opposing party controls the process, the results are not so bad. When the Democrats controlled the process, the Republicans were worse off ten years later 21 percent of the time, while they were actually better off 44 percent of the time.

Ultimately, whether or not the redistricting process produces a gerrymander or a dummymander depends on parties' ability to predict the future. Importantly, this is not limited to parties in sole control of the process. It may be easiest for scholars to draw a causal line in such situations, but the reality in most redistricting situations is that both parties have a hand in the process. Bipartisan redistricting surely involves the difficulty of predicting the future too. However, this is not how bipartisan redistricting has been viewed. Dating back to the work of Tufte (1973), the general assumption has been that bipartisan situations lead to incumbent protection plans. More recently, Lyons and Galderisi (1995) have examined the effect of partisan versus bipartisan controlled redistricting on incumbents and found that incumbents benefit in both instances. This

suggests that partisan and bipartisan redistricting may not be as different as commonly believed.

Table 4-2

States with Bipartisan Controlled Redistricting

*Part A:* Comparing the number of seats won by Democrats immediately prior to and after drawing new districts (percent of total in parentheses).

	<u>Total</u>	<u>Won Fewer</u>	<u>Won More</u>	<u>Stayed the Same</u>
1980-82	22	2 (9)	5 (23)	15 (68)
1990-92	23	11 (48)	3 (13)	9 (39)

*Part B:* Comparing the number of seats won by Democrats immediately prior to drawing new districts with the number won 10 years after redistricting (percent of total in parentheses).

	<u>Total</u>	<u>Won Fewer</u>	<u>Won More</u>	<u>Stayed the Same</u>
1980-90	22	6 (27)	10 (45)	6 (27)
1990-00	23	18 (78)	3 (13)	2 (9)

Party control of the redistricting process based on coding by Abramowitz (1983) and Niemi and Abramowitz (1994)

Table 4-2 presents the results of bipartisan redistricting for the Democratic party. Part A shows that Democrats did far better during bipartisan redistricting in the 1980s than in the 1990s in the short run. Part B tells much the same story; Democrats fared much better in the 1980s than in the 1990s. This is not too surprising given the fact that the Democrats lost control of the House in 1994. However, the interesting story to take away from Table 4-2 is that the Democrats were nearly as likely to gain or

lose seats as stay the same in the short run (47 percent of the time they either gained or lost seats) and far more likely to gain or lose seats in the long run (82 percent of the time they either gained or lost seats). Thus, the reality of bipartisan controlled redistricting would seem to be far from the politically neutral game of compromise suggested by much of the literature.

All told, the effects of partisan and bipartisan controlled redistricting are more complex than to simply say that the former leads to seat gains for the controlling party and the latter leads to incumbent protection. The predictive power of parties is limited no matter if they are in control of the process or not. The only difference between the two is that a party facing bipartisan controlled redistricting encounters the need to negotiate. There does not seem to be a compelling reason to assume that parties in this situation are any better at predicting the future than they are in partisan controlled situations, as evidenced by Reagan's veto during the 1970s (Republicans ended up worse off) and Republicans opposition in Virginia in the 1990s (Republicans benefited).

Additionally, it should not be assumed that neither party can gain an advantage in bipartisan situations. Political uncertainty associated with the future prospects for both parties leaves the door open for party gain even during bipartisan control situations. Yet, there has been no work, to my knowledge, that attempts to determine which parties might be more likely to gain in such situations. This is likely due to the traditional approach to redistricting that scholars have taken. This approach focuses on either Republican or Democratic gains and there does not seem to be a reason to suspect that there is anything about being a Republican or Democrat that should make

either party more likely to succeed in bipartisan situations in general. In order to better understand the dynamics of bipartisan redistricting, one needs a new approach.

### **Rethinking Redistricting**

One of the reasons why the redistricting literature has so often found contradictory results is because it has tied its analysis to the fates of particular parties; particularly the fate of the party in sole control of the process. This is unfortunate, since it is precisely these situations that present the toughest choices for parties. That is, they can choose to protect their incumbents or try to maximize their seats. The problem for scholars is that these two courses of action produce the exact opposite behaviors. When protecting incumbents, parties will decrease competitiveness in the state and when attempting to gain seats, they will increase competition. Both are considered gerrymanders, but only one results in an increase in seats. Thus, work attempting to connect seat gains to control will find weak or no correlation between the two because it does not have any way of knowing which path the parties will choose to take. In addition, these works' singular focus on the parties in control of the process miss an opportunity to explore redistricting in bipartisan contexts.

I argue that there is a need to change the focus of redistricting inquiry in order to allow for the systematic study of both partisan and bipartisan redistricting. In areas outside of the redistricting literature there has been work done on the advantages of being the majority party rather than the minority party. This suggests that the simple fact that each party has a veto is not a good enough reason to assume that the two

parties are equal participants in the process, which is what redistricting work does when it lumps all so called bipartisan processes into the same category. They do not allow for any variance. For instance, Smith et al. (2007) find that the frequency of being on the winning side for legislators in the majority party is about 20 percent higher than for legislators in the minority party. Importantly, they find an asymmetry in voting patterns between the majority and minority parties with the minority party being less cohesive. These results hold in both the House and Senate which means these advantages do not accrue to the majority party only when it has complete control of the process, as Senate majority parties routinely face an opposing party with the ability to filibuster. Additionally, there is work demonstrating the agenda setting advantage enjoyed by the majority party and leaders (Cox 2001; Taylor 1998). Therefore, there seems to be reason to believe that the majority party may have the upper hand in redistricting contexts no matter if they have sole control of the process or not.

Dusso (2009) also provides a reason to believe that partisan and bipartisan redistricting are both dynamic processes. I have argued here that parties conducting redistricting face considerable uncertainty about the future. Dusso (2009) demonstrates that, in bipartisan situations, the weaker the majority party is, the more the process will result in an increase in competitiveness. In partisan situations it is the opposite, processes with stronger majority parties result in increased competitiveness. This analysis points to prospect theory (Kahneman and Tversky 1979) as an explanation, indicating that both weak majority parties in bipartisan situations and strong parties in partisan controlled situations are risk accepting. Both types of parties perceive

themselves to be in the domain of losses. That is, they are the majority party (i.e., they control two of the three major state institutions), but they perceive themselves as not having as many seats as they should, which drives them to seek to capture what is missing. Ultimately, that work demonstrates that party perception does have a significant effect on whether or not parties increase competitiveness in their state. The important takeaway point for the present analysis is that, whether or not the process is partisan or bipartisan controlled, perception has a significant effect on outcomes and therefore there is a need to analyze both partisan and bipartisan redistricting.

Producing a model that allows both partisan and bipartisan redistricting to be dynamic processes requires one to rethink the measurement of the dependent variable. With the exception of works focused on congressional incumbents, the redistricting literature tends to define its dependent variables with reference to a specific party or parties. That is, works explaining bias in the system define bias in relation to Democrats or Republicans (e.g., Cox and Katz 2002). In the same way, works focused on seat gains make the connection between a specific party, control of the process, and seat gains or losses (e.g., Niemi and Abramowitz 1994). Measuring change in seats for the party in sole control of the process eliminates bipartisan redistricting from consideration. Measuring change in the number of seats for either the Democrats or Republicans assumes that the specific party matters and there does not seem to be a theoretical reason to believe that Democrats or Republicans will be any better than the other at drawing district lines. Thus, one needs to produce a new measure that is not connected to control of the process or a specific party.

In order to get around these problems, I produce a dependent variable measure of seat change that defines the units of analysis based on relative strength of the parties within the state. That is, there are two parties in each state, which means there will be one party in control of at least two of the three major branches (i.e., the State House, State Senate, and governorship).<sup>17</sup> This produces a relative balance of power in each state between the two parties. The idea is that there is a party power spectrum, with states that are nearly even on the one end and states dominated by one party on the other. In this context the specific party does not matter. I argue that this relative balance of power is a significant factor in what the redistricting process ultimately produces. That is, the majority party is affected differently than the minority party. Sometimes the majority party is so strong in a state that it has sole control of the process, while at other times and in other states it does not.

Exploring redistricting by looking to its impact on the majority party in the state will also allow one to determine the independent effects of traditional explanations for seat gains. If variables like partisan control (i.e., single party or bipartisan) and the method used (i.e., the courts, commission, or legislative process) have a significant independent influence on seat gains, then it should show up in this new model. Importantly, this change also affords an opportunity to include a measure of how changes to district competitiveness affect seat gains and losses, which is less commonly

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<sup>17</sup> Except for Nebraska

included in models focused on determining partisan gain (see Carson and Crespin 2004 for one exception).<sup>18</sup>

### **Generating Testable Hypotheses**

To this point I have made an argument that centers on the need to address both partisan and bipartisan redistricting together. In doing so, this work will be able to provide an examination of how capable and in what contexts parties are able to benefit themselves through redistricting and when they are likely to end up worse off. I have used Grofman and Brunell's (2005) gerrymander versus dummymander terminology and, for the purposes of this paper, I define a gerrymander as any time the majority party gains seats after redistricting and a dummymander as any time the majority party loses seats after redistricting. This may seem harsh, as the ultimate cause of a party's gaining or losing seats may include something other than the redistricting itself, e.g., national party trends. But the argument here is that the majority party should be able to gain from redistricting and much of the existing literature suggests this should be doubly so when the party is in complete control of the process. Therefore, at a minimum, the party should be able to maintain the status quo, regardless of how much or how little the state is already gerrymandered in their favor. Losing seats is then, ultimately, seen as somewhat of a failure. In the following section I present ten hypotheses designed to address both old and new concepts in redistricting scholarship.

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<sup>18</sup> To be sure, changes in districts are used by scholars (e.g., Gopian and West 1984 and Swain, Borrelli, Reed 1998), but not change in competitiveness. Change in districts is also used in works focused on incumbency advantage (e.g., Ansolabehere, Snyder, Stewart 2000) or on how representatives change their voting patterns post redistricting (e.g., Glazer and Robbins 1985; LeVeaux-Sharp 2001).

The first set of hypotheses center on how changes to congressional district competitiveness affect the future prospects for the majority party. Dusso (2009) focuses specifically on explaining the changes in district competitiveness that parties make during redistricting. I find that during partisan controlled redistricting, the stronger the majority party is (measured as the percent of seats the majority party holds in the state legislature), the more the process will produce an increase in district competitiveness. Additionally, during bipartisan redistricting, the weaker the majority party is, the more the results of redistricting will increase competitiveness. This last part is particularly interesting since it suggests that the closer to parity the two parties are, the more they will negotiate an increase in competitive districts. This is the opposite of what one would expect based on the current state of the literature. In the end, no matter if redistricting is partisan or bipartisan, parties looking to gain seats must increase competitiveness, leading to two hypotheses.

*H1*: In partisan controlled situations, the greater the increase in competitiveness, the more likely the majority party is to gain seats.

*H2*: In bipartisan controlled situations, the greater the increase in competitiveness, the more likely the majority party is to gain seats.

While both *H1* and *H2* predict seat gains for the majority party, the implications of finding either one or both to be true are entirely different. Hypothesis *H1* is the

literature's most commonly tested hypothesis and finding support for it would simply mean that parties in sole control of the process gain from it. *H2*, however, is entirely new. Finding that the majority party gains in this situation would lend support to my claim that bipartisan redistricting helps the majority party for the reasons outlined above. Additionally, finding support for either hypothesis would demonstrate the importance of how parties change average district competitiveness in their states during redistricting.

The second set of hypotheses is derived from work focused on the effects of redistricting institutions. In their recent work Carson and Crespin (2004) focus specifically on the effects of each method of redistricting (see also Butler and Cain 1992 and McDonald 2004). In particular, they seek to identify the effect the redistricting method has on the competitiveness of congressional races. They look at post-redistricting elections in 1992 and 2002 and find that court and commission designed plans have a significant positive influence on the competitiveness of congressional races.

This is an interesting result because up until recently (McDonald 2004), court and commission redistricting have been lumped in with bipartisan legislative redistricting. That is, scholars have been so focused on identifying gerrymanders by parties in control, that everything else is simply coded as not in control. Carson and Crespin's finding that court and commission redistricting (which are typically viewed as bipartisan) lead to increased competitiveness is consistent with Dusso (2009). In that work I find that bipartisan legislative redistricting leads to an increase in average competitiveness when

the majority party is weak. The connection is that bipartisan situations, be it a court, commission, or legislature, lead to increased competitiveness and increased competitiveness in bipartisan situations (as I argue in *H2*) lead to gains for the majority party. The result is the following two hypotheses:

*H3*: If a state uses a commission rather than the legislative process, then the majority party will gain seats.

*H4*: If a state uses the courts to produce new congressional districts, then the majority party will gain seats.

A third set of hypotheses (four in all) stem from the reapportionment of seats among the states after the decennial census. Reapportionment provides a particularly good opportunity to test the gerrymandering skills of parties because it creates three distinct sets of states, i.e., states that gain seats, states that lose seats, and states that remain the same. It is relatively rare for redistricting models to control for reapportionment, but the general thought is that gaining seats provides a tremendous opportunity for the majority party. Here I develop individual hypotheses about the effects of gaining seats or losing seats and hypotheses about the effects of reapportionment in general.

Lyons and Galderisi (1995) explore how reapportionment affects incumbents. They find that, regardless of whether or not redistricting was partisan or bipartisan

controlled, in states that lost seats incumbents lost with a much higher rate than in states that gained or remained the same. However, their analysis is descriptive and does not control for other variables that may have an effect on incumbents such as the redistricting method used by the state (i.e., courts, commissions, or legislature), whether or not the state required preclearance by the Justice Department, or overall competitiveness shifts in the state. This work, however, is suggestive of the importance of reapportionment and demands further exploration.<sup>19</sup> Thus, the following two hypotheses:<sup>20</sup>

*H5:* If a state loses seats, the majority party is less likely to gain seats than lose seats or remain the same.

*H6:* If a state gains seats, the majority party is more likely to gain seats than lose seats or remain the same.

The seventh and eighth hypotheses are closely related to *H5* and *H6* and have been left unexplored by the literature. The occurrence of reapportionment, no matter if the state gains or loses seats, induces considerable uncertainty in the state. Parties, be it partisan or bipartisan control, must shuffle their existing districts to accommodate either losing or gaining a district. This presents a special opportunity to test parties'

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<sup>19</sup> Swain et al. (1998) include a reapportionment variable in their models but it does not reach conventional levels of significance.

<sup>20</sup> It will be possible to test these two hypotheses simultaneously by producing two dummy variables, one for states that gained seats and one for states that lost seats and then dropping states that stayed the same which would become the comparison category.

ability to produce gerrymanders rather than dummymanders. In this case, the focus is on the effect of reapportionment in general (i.e., gaining seats or losing seats). If parties are especially adept at producing gerrymanders, than they should be able to take advantage of the change induced by reapportionment, or at least mitigate its deleterious effects. If parties are better at producing gerrymanders than dummymanders, then reapportionment should lead to seat gains or maintaining the status quo. If parties are no better at producing gerrymanders than dummymanders, then reapportionment should lead to an increased likelihood of both gaining and losing seats. Thus, the following two hypotheses:

*H7*: When a state is reapportioned, the majority party is more likely to gain seats or stay the same than to lose seats.

*H8*: When a state is reapportioned, the majority party is more likely to gain seats or lose seats than stay the same.

It is important to be clear about the subtle difference between *H7* and *H8*. *H7* is a hypothesis assuming that parties are good at producing gerrymanders. *H8* is a hypothesis assuming they parties are as likely to produce dummymanders as gerrymanders. In the case of *H7* the least likely occurrence is a loss of seats. In the case of *H8* the least likely outcome is maintaining the status quo.

A fourth set of hypotheses comes from the need by many states to get preclearance from the Department of Justice for its new districting plans. Swain, Borrelli, and Reed (1998) examine the effect of the preclearance requirement on the occurrence of majority-minority districts. Despite the seeming importance of this potential constraint, it is rarely controlled for by scholars attempting to explain changes in seat totals. It is long recognized that the occurrence of majority-minority districts has the potential to affect Democratic party more than the Republican party, as minority voters have a strong tendency to vote Democratic (e.g., Epstein and O'Halloran 1999; Lublin 1997; Shotts 2003). For example, Hill (1995) finds that four Republican victories in the southern states in 1992 are directly attributable to the creation of majority-minority districts. When states are required to get preclearance, one is presented with a situation where there is reason to believe that the fates of each party differ. Therefore, the following two hypotheses combine party with the preclearance requirement:

*H9:* When the Republicans are in the majority and their state requires Justice Department preclearance, the Republicans will be more likely to gain seats than stay the same or lose seats.

*H10:* When the Democrats are in the majority and their state requires Justice Department preclearance, the Democrats will be more likely to stay the same or gain seats than lose seats.

## **Data and Methods**

In order to test the ten hypotheses presented above, I collect observational data from the last three redistricting cycles (1980, 1990, and 2000). In this section I outline variables for two models. I am focused specifically on explaining seat gains and losses due to redistricting, but rather than looking at them for specific parties, I design two dependent variables that measure seat gains and losses for the majority party in the state in the short term and the long term. I then present independent variables specifically testing each of the hypotheses along with control variables.

### *Dependent Variables*

Majority party is defined here as the party controlling at least two of the three major state institutions (state House, Senate, or governorship) at the time of redistricting. The short term dependent variable measures change in the number of seats the majority party controls from the election prior to redistricting to the first election following redistricting (i.e., 1980-82, 1990-92, 2000-02). I code this variable as -1 if the majority party lost seats, 0 if it maintained the same number of seats and 1 if it gained seats. Thus, this variable takes on only three possible values. The long term dependent variable measures change in the number of seats the majority party controls from the election prior to redistricting to the last election in that redistricting cycle (i.e., 1980-90, 1990-00). This is then coded in the same manner as the short term variable. The long term model contains data from only the 1980s and 1990s because the 2010 elections have yet to occur. Coding these dependent variables in this way allows me to

estimate two multinomial logit models. This provides the ability to test for both the short term and long term influence of the following thirteen independent variables on the majority party's likelihood of gaining or losing seats.

Multinomial logit was chosen over ordered logit for two reasons. The first reason is theoretical. The redistricting process I am modeling may appear more ordered than it actually is. Because parties may produce dummymanders as often as gerrymanders, it is not necessarily the case that being significantly more likely to gain seats rather than stay the same means that a party is also significantly more likely to gain seats than lose seats. For example, a party in a state that gains a seat due to reapportionment sees this as an opportunity to gain seats for its party. In doing so, it increases the competitiveness of districts across the state. This may indeed result in a net gain in seats for the party, but if their predictions of the future are off, they may actually lose seats. Thus, the result in this situation is that there is a high likelihood of change, but whether or not that change is positive or negative is unknown. The least likely outcome is maintaining the status quo. As a result, estimating multinomial rather than ordinal logit models also allows for the testing of hypotheses *H7* and *H8*. Ordered logit precluded the possibility of both dummymanders and gerrymanders. A second, practical reason for choosing multinomial logit over ordered logit is that the parallel regression assumption appears to be violated.<sup>21</sup>

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<sup>21</sup> A Wald test devised by Brant (1990) provides evidence that four of the variables in the model violate the parallel regression assumption (State gained seats, state lost seats, state needs preclearance, and state needs preclearance x Democrats majority party).

### *Independent Variables*

The first independent variable is a measure of change in the competitiveness of a state's congressional districts. This variable is key to testing the first two hypotheses. In order to measure change I need to measure competitiveness before and after redistricting. I do this by, first, finding the absolute value of the difference between the Republican and Democratic presidential vote for each district in each state (I use the 1980 election for the 1980s cycle, the 1988 election for the 1990s cycle, and the 2000 election for the 2000s cycle).<sup>22</sup> Second, I average this difference across all the state's districts.<sup>23</sup> This gives me a measure of the average competitiveness prior to redistricting. I then need to find competitiveness after redistricting. For this I utilize CQ's estimates of how the new districts would have voted had they been in existence during the prior presidential election (for other works using these estimates see Gopian and West 1984; Ostdiek 1995; and Swian, Borrelli, Reed 1998).<sup>24</sup> For example, CQ finds how districts put in place in 1992 would have voted had they been in existence during the 1988 presidential election.

The result produces a measure of district competitiveness prior to and after redistricting. By subtracting the post-redistricting number (which ranges from 2.5 to 53 percent) from the pre-redistricting number (which ranges from 3 to 52 percent), I

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<sup>22</sup> Using presidential vote to measure district partisanship is quite common (Niemi and Winsky 1992). Butler and Cain (1992) point to particularly poor performing Democratic presidential candidates, such as Carter in 1980 and Mondale in 1984, as good loyalty measures. Ansolabehere, Snyder, and Stewart (2000) use presidential vote as their base for comparing old and new voters. In fact, this variable has a long history (see for example, Cain and Campagna 1987; Converse 1966; Erikson 1971; Erikson and Wright 1993; McAdams and Johannes 1988).

<sup>23</sup> Congressional district voting data obtained from *The Almanac of American Politics* (Barone and Cohen 1982, 1990, 2002)

<sup>24</sup> In Congressional Quarterly's *Congressional Districts in the 1980s, 1990s, and 2000s*.

produce a measure of change in congressional district competitiveness. This measure ranges from negative 13 to positive 4.7. To be clear, positive change means the districts became more competitive on average in the state, while negative change means that districts became less competitive on average. California provides an example of how this variable captures change. Its redistricting process in 2001 produced a reduction in average competitiveness of 1.35 percent.

The second independent variable is a simple dummy indicating whether the state's redistricting process was bipartisan or controlled by a single party. This is coded as 1 if there was single party control and 0 otherwise. This variable is based on coding by Abramowitz (1983) for the 1980 round of redistricting, Niemi and Abramowitz (1994) for the 1990 round, and McDonald (2004) for the 2000 round.

I interact these first two independent variables in order to produce a total of three variables: (1) *Change in Competitiveness*; (2) *Change in Competitiveness x Partisan Control*; and (3) *Partisan Control*. The interaction of these variables provides unique contexts for testing the importance of changes to competitiveness and partisan versus bipartisan redistricting. The meaning of the first variable is change in competitiveness during bipartisan controlled redistricting. The meaning of the second variable is change in competitiveness during partisan controlled redistricting. The meaning of the third variable is the effect of partisan control when there is no change in district competitiveness.

These variables test hypotheses *H1* and *H2*. The variable *Change in Competitiveness x Partisan Control* is a clear test of *H1*. The greater the value of this

variable, the more a party in control of the process increased competitiveness in the state. This variable is a test of the traditional expectation of the redistricting literature that the sign will be positive when comparing the likelihood of gaining seats to both staying the same and losing seats. The variable *Change in Competitiveness* captures change in competitiveness when there is bipartisan control. This variable provides a clear test of *H2*. I expect to see a positive sign on this variable when comparing gaining seats to either staying the same or losing seats.

The fourth and fifth explanatory variables are two dichotomous variables indicating how each state conducts redistricting (i.e., court, commission, or legislature). First is a dummy coded 1 if the state uses a commission and 0 otherwise. The second is a dummy coded 1 if the state uses the courts and 0 otherwise.<sup>25</sup> In this case, states that use the legislative process are the comparison group. These two variables provide test for *H3* and *H4*. Thus, the expectation for both the commission dummy variable and the courts dummy variable is that the sign will be positive. This would indicate that majority parties in states using commissions or courts are more likely to gain seats than majority parties in states using the legislative process.

The sixth and seventh independent variables are also two dummy variables and capture how a state is affected by reapportionment. The first is a dummy coded 1 if the state gained seats due to reapportionment and 0 otherwise. The second is coded 1 if the state lost seats due to reapportionment and 0 otherwise. In both instances the comparison group becomes states that remained the same. While these variables could

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<sup>25</sup> Court or Commission used to draw districts variable based on Campagna and Grofman (1990) for the 1980s, Carson and Crespin (2004) for the 1990s, and McDonald (2004) for the 2000s.

be coded as a single ordinal variable, I have chosen to utilize two dummy variables instead. In this way the movement between the different categories is allowed to have a different effect, which is more flexible than including a single ordinal variable.<sup>26</sup> The dummy variable coding states that lost seats tests *H5*. The expectation is a negative sign when comparing the majority party gaining seats to either staying the same or losing seats. The dummy variable coding states that gained seats tests *H6*. The expectation is a positive sign when comparing the majority party gaining seats to either staying the same or losing seats.

The combination of these two dummy variables also provides tests for *H7* and *H8*. For *H7*, the expectation is that, whether or not the state gains or loses seats to reapportionment, the majority party should be more likely to gain seats than stay the same or lose seats. The expectation is a positive sign when comparing gaining seats to the status quo for both variables. This combines with the expectation of a negative sign when comparing losing seats to the status quo and positive sign when comparing gaining seats to losing seats. Thus, the full test of *H7* comes from the behavior of these two dummy variables in all three of the binary comparisons in the multinomial logit estimates. For *H8*, the expectation is that when a state is reapportioned, the majority party is both more likely to gain seats and lose seats than stay the same when compared to states that are not reapportioned.

The eighth independent variable is a dummy indicating whether or not the majority party is Democratic or Republican. This variable is coded as 1 if the majority

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<sup>26</sup> Comparing the Pseudo  $R^2$  of the model run with the dummy variables (.268) to the model run with the ordinal variable (.140) also suggests inclusion of the dummy variables is warranted.

party is the Democrats and 0 otherwise. The ninth variable is a dummy variable indicating whether or not the state is required to submit its redistricting plans to the Justice Department for preclearance.<sup>27</sup> This is coded 1 if the state is required to get preclearance and 0 otherwise. These two variables are interacted and produce the tenth explanatory variable. These variables provide a test of the final two hypotheses, *H9* and *H10*.

The meaning of the interaction of the dummy coding the majority party and the dummy coding preclearance is Democratic control when the state is required to get preclearance. This interaction variable tests *H10*. The expectation is negative sign when comparing gaining seats to either staying the same or losing seats. The meaning of the dummy coding the need for preclearance by itself is a Republican majority in a state that requires preclearance. This would appear to be the best possible situation for Republicans and in testing *H9* the expectation is a positive sign when comparing gaining seats to either staying the same or losing seats. The variable coding party by itself means Democratic control when the state does not require preclearance. Thus, the expectation is no significant difference in the likelihood of staying the same, gaining or losing seats.

These data cover activity across three redistricting cycles. Thus, both the short term and long term models include additional control variables. First is a dummy coded 1 if redistricting cycle is the 1980s and 0 otherwise. Second is a dummy coded 1 if the

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<sup>27</sup> I code only states where all or most of the state is subject to preclearance (AL, AZ, GA, LA, MS, SC, TX, VA). There are states with specific counties or townships that are also required to get preclearance (CA, FL, NY, NC, SD, MI, NH), but not the entire state. These states are coded as 0 with states not requiring preclearance.

redistricting cycle is the 2000s and 0 otherwise. In this instance the 1990s is dropped and becomes the comparison category. The thirteenth and final variable is added to the model estimating the long term effects. Since the dependent variable in this model is measuring change in seats across a decade from the election just prior to redistricting (i.e., 1980 and 1990) to the last election in the cycle (i.e., 1990 and 2000), it is possible that the districts in the state were adjusted after the first redistricting took place. Thus, this variable is coded 1 if the state adjusted district boundaries after 1982 or 1992 and 0 otherwise.<sup>28</sup>

Table 4-3 presents each of the key variables testing the ten hypotheses along with the expected sign. Two multinomial logit models will be estimated, therefore, the table presents three sets of sign expectations. These correspond to (1) the likelihood of gaining seats rather than losing seats; (2) the likelihood of gaining seats rather than staying the same; and (3) the likelihood of losing seats rather than staying the same. For example, the change in competitiveness variable tests hypothesis *H2* and the expectation is that the majority party will be more likely to gain seats than lose them, more likely to gain seats than stay the same, and less likely to lose seats than stay the same.

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<sup>28</sup> Coding based on data collected by Scott Adler.

Table 4-3

Explanatory Variables, Hypothesis Testing, and Expected Sign

Variable*	Hypothesis	Expected Sign**		
		G v L	G v S	L v S
Change in Competitiveness	H2	+	+	-
Change in Competitiveness x Partisan Control	H1	+	+	-
State Used Commission	H3	+	+	-
State Used Courts	H4	+	+	-
State Gained Seats	H6	+	+	-
State Lost Seats	H5	-	-	+
Gained Seats and Lost Seats	H7	+	+	-
Gained Seats and Lost Seats	H8		+	+
Majority Party Democratic x Need Preclearance	H10	-	-	+
State Needs Preclearance	H9	+	+	-

\* Control variables omitted (Partisan control, Majority Party Democratic, Cycle 1980, Cycle 2000, Post redistricting adjustments)

\*\* G v L = Comparing gaining seats to losing them; G v S = Comparing gaining seats to staying the same; L v S = Comparing losing seats to staying the same

**Results**

Table 4-4 presents results after estimation of a multinomial logit model predicting change in majority party seats in the first election after redistricting. The output in Table 4-4 is separated into three parts. Part A represents the effect of each of the variables on the likelihood of gaining seats rather than the alternative of maintaining the status quo. Part B represents the variables' effects on the likelihood of losing seats rather than the alternative of maintaining the status quo. Finally, Part C represents the likelihood of gaining seats rather than losing seats. Thus, for the three potential

Table 4-4

Predicting Change in the Number of Seats the Majority Party Wins the First Election  
after Redistricting

Variable	Estimate	Robust Std. Error
<i>Part A: Gaining Seats vs. Status Quo</i>		
Change in Competitiveness	0.216*	0.130
Change in Competitiveness x Partisan Control	-0.277	0.245
Partisan Control	-0.003	0.834
State Used Commission	1.414*	0.759
State Used Courts	-0.731	0.758
State Gained Seats	3.768***	0.834
State Lost Seats	2.236**	0.805
Majority Party Democratic x State Needs Preclearance	-1.547	1.817
State Needs Preclearance	3.160*	1.750
Majority Party Democratic	1.049	1.370
<i>Part B: Losing Seats vs. Status Quo</i>		
Change in Competitiveness	0.089	0.195
Change in Competitiveness x Partisan Control	-0.150	0.266
Partisan Control	0.010	0.557
State Used Commission	-0.168	0.663
State Used Courts	-0.350	0.743
State Gained Seats	2.132**	0.683
State Lost Seats	2.135***	0.602
Majority Party Democratic x State Needs Preclearance	-1.804	1.286
State Needs Preclearance	2.538*	1.220
Majority Party Democratic	-0.359	0.681
<i>Part C: Gaining Seats vs. Losing Seats</i>		
Change in Competitiveness	0.127	0.187
Change in Competitiveness x Partisan Control	-0.127	0.255
Partisan Control	-0.013	0.668
State Used Commission	1.583*	0.629
State Used Courts	-0.382	0.868
State Gained Seats	1.636*	0.799
State Lost Seats	0.101	0.922
Majority Party Democratic x State Needs Preclearance	0.257	1.836
State Needs Preclearance	0.622	1.528
Majority Party Democratic	1.401	1.374

Notes: Control variables omitted from table (Cycle 1980, Cycle 2000)

\* p < .05, \*\* p < .01, \*\*\* p < .001 (one-tailed) Log Likelihood = -92.117 Pseudo R<sup>2</sup> = 0.27 N = 125

Hypothesis *H3* predicts that the majority party will gain seats when the state uses a commission rather than the legislative process to produce new districts. The variable *State Used Commission* tests this hypothesis. This variable reaches significance with the predicted sign in both Part A (comparing seat gain to maintaining the status quo) and Part C (comparing seat gain to losing seats). This is a strong indication that states using commissions benefit the majority party and supports *H3*. This is an interesting finding, in that the work of Carson and Crespin (2004) suggests that commissions are more likely than legislatures to increase competitiveness.<sup>29</sup> The results presented here indicate that this increase in competitiveness is not a politically neutral phenomenon. For example, the Arizona Democrats in 2001 were the majority party in the state. The state utilized a commission for redistricting. In 2001 they held just one seat. The commission reduced competitiveness by a small amount (.267 percent). The Democrats won one additional seat in 2002 and now after the 2008 election they control five of the state's eight seats. Another example comes from Washington Democrats in 1991. The state's redistricting commission reduced competitiveness by 1.1 percent. The Democrats were the majority party in the state and held five of the state's eight seats in 1991. They went on to win eight of the state's nine seats in the next election and maintained control of six seats at the end of the redistricting cycle after the 2000 elections.

Turning to the hypotheses and variables developed to test the impact of reapportionment, the results in Table 4-4 support just one of the four hypotheses. *H8*

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<sup>29</sup> Other work has found no such connection between commissions and an increase in competitiveness (Dusso 2009).

predicts that parties are no better at producing gerrymanders than dummymanders and, therefore, reapportionment leads to an increase in both gaining seats and losing seats. Comparing the majority party gaining seats to the alternative of maintaining the status quo (Part A), both should be positive. They are indeed both positive and reach significance. When comparing losing seats to maintaining the status quo, both variables should also be positive (Part B). Once again, they do reach significance and are properly signed. The results of these two variables suggest that the instability introduced by reapportionment leads to both gerrymanders and dummymanders, as parties fail to adequately predict future voting behavior. This is a particularly interesting finding because, to my knowledge, this is first large  $N$  study across multiple redistricting cycles to document the difficulty parties have producing favorable gerrymanders. This result also means that hypotheses  $H5$ ,  $H6$ , and  $H7$  are not confirmed.

Hypothesis  $H9$  indicates that, when the Republicans are in the majority and their state requires Justice Department preclearance, the Republicans will be more likely to gain seats than stay the same or lose seats. The variable *State Needs Preclearance* tests this hypothesis. In Part A it reaches significance with the expected sign. In Part B, however, it is significant but not the expected sign. This is similar to the variables *State Gained Seats* and *State Lost Seats*, in that it appears the Republicans have difficulty taking advantage of what is predicted to be an easy gain for them. This finding can help explain the difficulty found when attempting to document the Republican advantage in

states requiring preclearance. This is because even when they are in a strong position in the state, the Republicans are as likely to produce a dummymander as gerrymander.

Finally, the variables *Partisan Control*, *Change in Competitiveness x Partisan Control*, *State Used Courts*, *Majority Party Democratic*, and *Majority Party Democratic x State needs Preclearance* do not reach significance in any of the three parts. As a result, hypotheses *H1*, *H4*, and *H10* all fail to find support. The failure of *H1* is particularly interesting. The variable *Change in Competitiveness x Partisan Control* tests this hypothesis. The greater the value of this variable, the more competitiveness increased under single party control. This null result casts serious doubt on the ability of parties with sole control of the process to produce favorable gerrymanders.<sup>30</sup>

All told, the results of the short term model shed new light on many of the long held beliefs about the effects of redistricting. First is the finding that changes in competitiveness matter, but only during bipartisan redistricting. Second, partisan redistricting does not appear to have a systematic effect. Third, states that use commissions help the majority party. Fourth, reapportionment drives change, but is as likely to lead to losses as gains. Fifth, the need for preclearance is a significant factor, but Republicans cannot effectively harness it for systematic gains without risking losses.

Having discussed the short term results in Table 4-4, I now turn to the long term effects of these variables. The general finding in the literature is that any short term effect that may occur tends to dissipate through the cycle. Table 4-5 presents the

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<sup>30</sup> A more direct test of the effectiveness of single party control is to re-run the model, but drop the interaction between changes in competitiveness and partisan control. Doing this produces the same result. Thus, model specification does not appear to be the cause of the null result.

results after estimation of the long term model. This model predicts change in the majority party's seats from the election prior to redistricting to the last year of the redistricting cycle (1980-90; 1990-2000). These long term results confirm what others have found for variables such as the method used and the need for preclearance. However, the importance of changes in average district competitiveness and reapportionment remains.

As one can see in Table 4-5, the variable *Change in Competitiveness* finds significance in both Parts A and C. Recall that this variable captures average change in district competitiveness during bipartisan redistricting. This variable not only remain significant in the long run, but appears to have a greater effect in the long run than the short run. In Table 4-4 this variable is only significant when comparing gaining seats to the alternative of maintaining the status quo. In Table 5 it is also significant and properly signed when comparing gaining seats to the alternative of losing seats. Thus, this further confirms hypothesis *H2*.

Although not confirming *H8*, the variables *State Gained Seats* and *State Lost Seats* once again tell an interesting story about the havoc that reapportionment can wreak on the majority party's future prospects. The variable *State Gained Seats* is significant in Part B, comparing losing seats to maintaining the status quo. This means that the majority party is more likely to lose seats than maintain the status quo in the

Table 4-5

Predicting Change in the Number of Seats the Majority Party Wins the Last Election of the Redistricting Cycle

Variable	Estimate	Robust Std. Error
<i>Part A: Gaining Seats vs. Status Quo</i>		
Change in Competitiveness	0.313*	0.146
Change in Competitiveness x Partisan Control	-0.217	0.202
Partisan Control	-0.966	0.883
State Used Commission	-0.457	1.020
State Used Courts	0.393	1.000
State Gained Seats	1.811	1.121
State Lost Seats	-1.978*	0.779
State Needs Preclearance	1.436	1.375
<i>Part B: Losing Seats vs. Status Quo</i>		
Change in Competitiveness	0.140	0.126
Change in Competitiveness x Partisan Control	-0.132	0.192
Partisan Control	-0.691	0.730
State Used Commission	-0.751	1.172
State Used Courts	0.144	1.010
State Gained Seats	1.572*	0.883
State Lost Seats	0.946	0.762
State Needs Preclearance	0.870	1.155
<i>Part C: Gaining Seats vs. Losing Seats</i>		
Change in Competitiveness	0.173*	0.102
Change in Competitiveness x Partisan Control	-0.085	0.181
Partisan Control	-0.275	0.730
State Used Commission	0.293	0.923
State Used Courts	0.248	0.895
State Gained Seats	0.239	0.919
State Lost Seats	-2.924**	0.905
State Needs Preclearance	0.566	0.623

Notes: Control variables omitted from table (Majority Party Democratic, Cycle 1980, Post redistricting adjustments).

The variable Majority Party Democratic x Need Preclearance is dropped from the long term model due to too few instances of Republican control of states needing preclearance.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (one-tailed)

Log Likelihood = -74.190 Pseudo  $R^2 = 0.170$  N = 84

long term when the state gains seats, but not necessarily more likely to lose seats than gain seats. The variable *State Lost Seats* reaches significance in both Parts A and C. In both instances the sign is negative. This is a strong indication that the majority party is both more likely to lose seats than gain seats and more likely to maintain the status quo than gain seats when the state loses seats to reapportionment. This is a rather striking finding as the long term prospects for the majority party when the state is reapportioned are bleak, particularly when the state loses seats.

## **Discussion**

The short term and long term models turn up a number of new findings. First is the importance of changes to district competitiveness. This is one of the few variables that finds significance in both the short and long term. In fact, it appears that the changes to average competitiveness are even more important in the long run than in the short run. Importantly, it is the changes made during bipartisan control, not partisan single party control that have a significant effect. In both the long term and short term, the greater the increase in competitiveness, the more likely the majority party is to gain seats than stay the same.

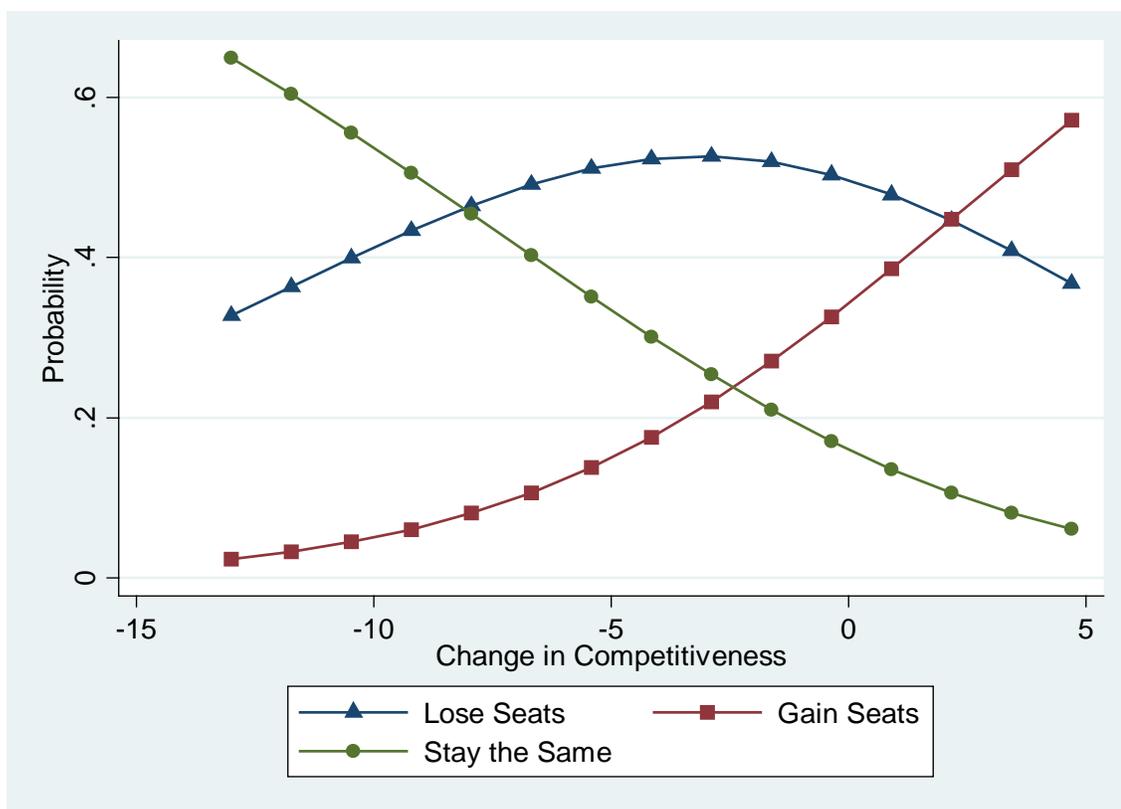
Additionally, in the long run, the more competitiveness increases, the more the majority party is likely to gain seats than lose seats. Dusso (2009) demonstrates that during bipartisan control, competitiveness increases as the majority party gets weaker. In that work I measure majority party strength in the state as the percentage of seats held in the state legislature by the party that holds two of the three major state

institutions (House, Senate, governorship). The result is that the stronger the minority party (or weaker the majority party) is in the state, the more competitiveness will increase. This increase ultimately helps the majority party in the short term and long term, suggesting the rather perverse conclusion that strong minorities participate in their own demise.

Figure 4-1 presents the long term effects of changes to competitiveness during bipartisan redistricting, holding all other variables at their mean. Each of the three lines in the figure represents one of the three potential outcomes for the majority party (i.e., gain seats, lose seats, or stay the same), with the y-axis indicating the probability of choosing one of the three and the x-axis indicating changes in competitiveness. As one would expect, the probability of gaining seats is highest when parties increase competitiveness, while the probability of staying the same is highest when competitiveness is substantially decreased. The most interesting movement in the graph comes from the line depicting the probability of losing seats. Losing seats is least likely to occur at either extreme, while more likely to occur with slight decreases to competitiveness. It would appear that indecisive bipartisan processes that produce only slight change to the districts are the most dangerous for the majority party in the long run.

Figure 4-1

Long Term Effect of Changes to Competitiveness During Bipartisan Redistricting



Note: Predicted Change computed using SPost (Long and Freese 2006) holding all other variables at their mean.

Table 4-6 presents discrete change values for each of the significant dichotomous variables in the short and long run, holding all other variables at their mean. Part A presents results from the short term model, while Part B presents results from the long term model. The variables *State Gained Seats* and *State Lost Seats* reach significance in both cases of gaining or losing seats rather than maintaining the status quo. Part A of Table 4-6 shows the importance of each. In the case of the state gaining

Table 4-6

Discreet Change in the Probability of each outcome for the Majority Party as the Dummy Variable moves from 0 to 1

Variable	Lose Seats	Gain Seats	Stay the Same
<i>Part A: Short Term</i>			
State Gained Seats	.101 (-.13 - .33)	<b>.477</b> <b>(.26 - .70)</b>	<b>-.578</b> <b>(-.74 - -.41)</b>
State Lost Seats	<b>.323</b> <b>(.08 - .56)</b>	.167 (-.04 - .38)	<b>-.490</b> <b>(-.68 - -.30)</b>
State Used Commission	-.103 (-.28 - .08)	<b>.230</b> <b>(.02 - .44)</b>	-.127 (-.41 - .16)
State Needs Preclearance	.284 (-.13 - .70)	.286 (-.20 - .77)	<b>-.570</b> <b>(-.89 - -.25)</b>
<i>Part B: Long Term</i>			
State Gained Seats	.100 (-.27 - .48)	.129 (-.26 - .51)	<b>-.229</b> <b>(-.38 - -.08)</b>
State Lost Seats	<b>.407</b> <b>(.12 - .69)</b>	<b>-.369</b> <b>(-.52 - -.21)</b>	-.038 (-.24 - .16)

Notes: Discreet Change values computed using Stata's mfx function holding all other variables at their mean.

95% C.I. in parentheses

Bolded values =  $p < .05$

seats, the probability of the majority party gaining seats is .477, while the probability that they will stay the same is -.578. In the case of the state losing seats, the probability that the majority party will lose seats is about .323, while the probability they will stay the same is -.490. These effects are, of course, larger than those observed with changes in competitiveness. The long run story (Part B) is about how the majority party's likelihood of losing seats increases when the state loses seats (about .407) at the same time as its probability of gaining seats is reduced (-.369). Additionally, gaining seats from reapportionment does not have the positive effect many assume. The majority party's

likelihood of staying the same is reduced (-.229), but does not lead to a statistically significant increase in the likelihood of gaining seats. This is a particularly chilling result for the majority party and the looming threat of a dummymander.<sup>31</sup>

The final two variables included in Table 4-6 are dummies indicating that the state used a commission and the state needed preclearance. Both these variables are only significant in the short run. The story with states using commissions is straightforward; majority parties gain in the short term compared to those in states using the legislative process. Table 4-6 indicates that the effect of using a commission is an increase in the probability of gaining seats by .230. The preclearance variable represents Republican majorities in states needing preclearance. As discussed earlier, the results suggest the Republicans have difficulty taking advantage of these situations. Table 4-6 indicates that the effect on Republican majorities in states needing preclearance is to decrease the likelihood of staying the same, but failing to produce a statistically significant gain in seats.

The failure of single party controlled redistricting to find significance in either the short term or long term models deserves further exploration. The folk wisdom that these types of situations are going to produce partisan gerrymanders is generally so strong that the scholarly redistricting literature's mixed findings in this regard are often overlooked. The results presented here clearly fall on the side of those works finding no systematic gains for parties in control. The argument is not that parties in these

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<sup>31</sup> I call this a dummymander because there is no reason to suspect that the majority party should be systematically disadvantaged by the loss of seats to reapportionment. They have the advantage of control of two of the state's three major governmental branches and, yet, they end up worse off.

situations cannot gain from them, but that they fall victim to (1) their competing desires to gain seats and protect their incumbents and (2) their inability to predict future voting patterns.

In combination, the competing desires and unknown future lead to parties like the 1991 Democrats in Virginia who reduced average competitiveness in the state by 4.5 percent, won one additional seat in the short term, but then ended the decade with half the seats they began it with (i.e., in 1980 they had six and in 2000 they had three). It also leads to the 1991 Democrats in Kentucky who increased average competitiveness by 4.6 percent. They held their four congressional seats in 1992, but when William H. Natcher died in March of 1994 the Republicans were able to pick up the seat during a special election. The Republicans then went on to take five of the state's six seats by the end of the 2000 elections. Another example comes from the 2001 Republicans in Michigan. Republicans took the reins and proceeded to reduce average competitiveness in the state by 1.4 percent, which is not a particularly large change and would suggest maintaining the status quo. The move appeared to pay off in the short term, as they gained two seats in 1992 despite the state losing one seat to reapportionment. However, through the 2008 elections, the Republicans were back down to their original seven seats. From one perspective the 2001 Republican redistricting in Michigan could be considered a success as they have been able to steer the state's reapportionment loss to the Democrats' side of the aisle. But, of course, this type of success will not show up in works trying to find partisan gain through gerrymanders solely in the form of seat gains.

In conclusion, these results suggest a new avenue of exploration into the effects of redistricting. Heretofore, research has focused very little on the dynamics of bipartisan redistricting in favor of single party controlled redistricting. It has also spent little time examining the difficulty parties have producing favorable gerrymanders. To be sure, anecdotal accounts of redistricting failures abound. These results document that in many instances parties are as likely to generate dummymanders as gerrymanders. However, these results cannot tell us if there are specific differences between the parties that produce dummymanders and those that produce successful gerrymanders. Finally, this work has shone a light on how many traditional variables contribute to the production of both gerrymanders and dummymanders. Therefore, the results presented here demand further work into exactly who is likely to succeed in producing a partisan gerrymander and who is likely to fail.

## Chapter 5: The Value of a Psychological Approach to Institutional Change

A complete understanding of the life of institutions needs to account for periods of change and times of stasis. Explaining these two sides of the same coin has been the focus of much of the institutional development literature. However, understanding why change does or does not occur fails to explain why change took the form it ultimately did. That is, concepts such as punctuated equilibrium point to long periods of stasis punctuated by shorter periods of rapid change. The concept does not, however, provide much guidance as to why any period of rapid change ends in the particular new institutional arrangement and not another. The argument presented here is that psychological concepts such as prospect theory can provide scholars with leverage that the more traditional approaches to institutional development cannot.

The essence of the rational choice approach to institutional development is a world in which actors' pursuit of their chosen goal is restricted by the formal structures external to the individual. The results of this process are presented as virtually inevitable due to the restrictions placed on individual choice. The difficulty for the rational choice approach is that it has little to say about how individuals choose one goal over another (beyond excluding a subset of goals that are unachievable due, once again, to the structure of the system). Thus, rational choice approaches begin with an actor pursuing an exogenously derived goal, then go on to explain how the actor succeeds or fails to reach the goal based on the context within which he or she pursues it.

The historical approach to institutional development addresses goal formation by pointing to specific institutional contexts as generators of interests and goals. The important contribution of this perspective is its meticulous focus on timing and sequence. The problem is that it does not treat goal choice as a variable. In this way, it is similar to rational choice accounts in that the results of the historical process are presented as inevitable. Human agency is lost as the goals individuals pursue are dictated to them by the historical institutional context.

The sociological approach, like the rational choice and historical approaches, has focused on explaining periods of institutional stasis and change. From this perspective, individuals and institutions are inextricably intertwined. The dominant paradigm is rule following, thus long periods of institutional stability are readily understood. Institutional change develops over time as individuals' expectations of institutions and institutional performance diverge. However, this approach suffers from the same lack of specificity when it comes to explaining how individuals or groups choose between multiple potential goals during periods of institutional change.

As a result, the institutional development literature has produced a large amount of scholarship focusing on only part of the development story. This work has helped to refine our understanding of the causes of institutional change and stability. However, there has been little explicit focus on how institutional actors choose their goals. To the extent that the process of institutional change fails to reduce the players' options to

one, institutional development scholars need to provide better explanations of how players choose between their multiple potential options.

### *Psychological Approach Applied to Congressional Redistricting*

The preceding chapters have been an attempt to demonstrate how psychological understandings of behavior can help shine a light on how agents of institutional change choose among their many options. While readily identifying what parties across the country would like to accomplish during redistricting, the redistricting literature has failed to explain how parties choose between their competing goals. This has left a large hole in the redistricting literature, which the three traditional approaches to explaining institutional change cannot fill. Thus, in this context, a psychological approach can step in nicely.

The context of congressional redistricting provides an excellent opportunity to test the value of a psychological approach for two reasons. First, the process happens with regularity. This controls for potential confounding factors that may arise in situations where one needs to account for why change is occurring as much as why it took the form it did. This allows for a single minded focus on the actors' goal choice. Second, the redistricting literature has reached a relative consensus on what the goals of the actors are, i.e., protecting incumbents and maximizing seats. This affords one the opportunity to set aside what, in many other contexts, may be a very complex process of identifying the players' options or desires.

The choice to either protect a party's incumbents or attempt to gain seats contains variable amounts of risk to the party because in order to gain seats, the party must increase competitiveness. Increasing competitiveness gives the party a chance at winning more seats, but it also exposes the party over the course of the decade to partisan shifts among voters. For example, the 1994 and 2006 congressional elections were the culmination of large swings away from Democrats and Republicans respectively and saw them both lose control of the House. The redistricting process is a dangerous time for parties, as their ability to predict the future is tested. As a result, parties' willingness to accept risk is a key variable in understanding how parties redraw districts.

However, measuring risk propensity is difficult, with much of the literature simply ignoring it or assuming parties are risk averse. This is largely a function of the rational choice perspective adopted (implicitly or explicitly) by these works. Rational choice provides little guidance on how to deal with risk as a variable and has even less to say about how individuals develop a risk accepting or risk averse attitude. The historical and sociological perspectives are no better in this regard. Fortunately, a psychologically based perspective fills this void.

The challenge with utilizing psychologically based theories is that they are often demonstrated through experiments and thus are stylized versions of a significantly more complex real world. As a result, it can be difficult for applied scholars to determine which concepts apply when and where. In chapter 2, I argue that the solution to this

potential problem is to move beyond simply applying theories to a particular case, but to engage and refine the psychological theory itself. Here the refinement is with prospect theory. Prospect theory consists of many different concepts and chapter 2 focuses on loss aversion and the reflection effect. Both are applicable to the context of congressional redistricting, but individually can lead to conflicting behavioral predictions. Therefore, chapter 2 presents a set of experiments designed to test how these two concepts interact. The result is a demonstration that individuals who find themselves facing choices that include a risk component and a loss component will be risk accepting in the domain of gains and risk averse in the domain of losses, which is the opposite of traditional prospect theory. Thus, chapter 2 extends prospect theory to a more complex setting and provides behavioral predictions for parties conducting congressional redistricting, which is further developed in chapter 3.

Chapter 3 focuses specifically on congressional redistricting. In particular, it is concerned with identifying when parties will choose to increase the average competitiveness of their state's congressional districts and when they will choose to decrease competitiveness. This is where the rational choice, historical, and sociological perspectives struggle and a psychological perspective shines. Utilizing a combination of both traditional prospect theory and the refinements found in chapter 2, chapter 3 finds that parties do indeed exhibit variable risk propensities associated with being in either the domain of gains or losses. More specifically, the more in the domain of gains majority parties are during partisan redistricting, the more they will seek to increase competitiveness. The more in the domain of gains majority parties are during bipartisan

redistricting, the more they will seek to decrease competitiveness. This is a unique finding that only a psychological approach to institutional development could provide.

Chapter 4 builds on what is learned about changes in average district competitiveness in chapter 3 and asks what effect this has on seat gains and losses. This moves beyond a concern with institutional change and looks to understand the effect this change has on real world outcomes. Often scholars interested in explaining institutional development treat actors and their choices as if they can easily divine what the effect of a particular institutional change will be. While parties, politicians, and redistricting experts tend to believe they have a complete understanding of what will happen when they make changes to district boundaries in their state, the reality is that they are as likely to produce a dummymander as a gerrymander. Thus, the importance of parties' risk propensity during the redistricting process moves beyond its direct effect on changes to competitiveness. It has a secondary influence that manifests itself through the effect that these changes to competitiveness have on the likelihood of parties gaining or losing seats.

In chapter 4, the results of the short and long term models predicting seat change point to the importance of changes to average competitiveness during periods of bipartisan redistricting. The majority party in a state during bipartisan redistricting is significantly more likely to gain seats over the course of the decade than stay the same or lose seats. Chapter 3 indicates that the more in the domain of gains the majority party is, the more risk averse it will be. Domain is measured in chapter 3 as the percent

of seats held by the majority party in the state legislature. The result is that during bipartisan redistricting processes, the larger the disparity in state legislative seats held by the two parties, the more competitiveness will be reduced. Or, put another way, the closer the two parties are to parity in the state legislature, the more they will increase competitiveness during redistricting. This predictable behavior during bipartisan redistricting leads to district changes that help the majority party over the course of the decade. This is an entirely new finding. Importantly, the combined results of chapters 3 and 4 point in a new direction for the redistricting literature. They point to the importance, first, of risk propensity and, second, of bipartisan redistricting. Bipartisan redistricting is often overlooked in the literature, while parties' willingness to accept risk is either ignored or it is erroneously assumed to be risk aversion.

### *The Curious Case of Florida Redistricting*

The last 29 years of Florida history proves a fascinating case that demonstrates the risks of control and how a psychological approach helps to explain redistricting choices in that state. In 1980 Florida had fifteen congressional seats. Democrats controlled eleven of them and Republicans had four. Florida's Democrats were in control of redrawing the state's congressional districts, which had increased to nineteen after reapportionment. Additionally, the Democrats were in a relatively strong position in the state legislature where they held nearly 68 percent of the seats. Ultimately, the Democrats opted not to make any drastic changes to average competitiveness in the

state. They simply decreased average competitiveness by .39 percent. Control of the process netted the Democrats one new seat with Republicans adding three after the 1982 elections. But by the end of the decade, the Democrats had lost two seats (9 total), bringing the Republican's total to ten.

All was not lost, however. Redistricting was about to occur again after the 1990 census and the Democrats were once more in control. Florida gained four more seats through reapportionment, bringing its total to 23. The Democrats were not in quite as strong a position in the state legislature, however, with just 58 percent of the seats. In this round of redistricting, the Democrats made a relatively large decrease in average competitiveness, reducing it by 4.6 percent. This helped them to gain a single additional seat in 1992 (bringing their total to 10), while Republicans reaped the benefits of the new plan and picked up three seats (bringing their total to 13). The decade of the 1990s proved to be just as unkind to Florida Democrats as the 1980s were, as they were down to just 8 congressional seats after the 2000 elections. Thus, in 20 years and two redistricting cycles in which they controlled the process, Florida's Democratic party managed to lose three seats despite the state gaining eight new seats from reapportionment.

The saga of Florida's Democrats is not over, however. They received, perhaps, the greatest gift in 2000. The Republicans controlled the state after the 2000 elections, removing redistricting from Democratic hands. Republicans held 15 of Florida's 23 congressional districts and 63 percent of the seats in the state legislature. The state gained two more seats through reapportionment bringing the total to 25. Republicans

proceeded to follow the 1980 Democratic model and reduced average competitiveness in the state by just .18 percent. This proved a boon for the party as the number of Republicans swelled to eighteen with the Democrats losing another seat, dropping their total to seven. But the 2000s have, so far, proven unkind to Florida's Republicans. After the 2008 elections, they have given back their gains from earlier in the decade and now control just 15 seats. This has brought the Democratic total back up to ten, which is just one less than the number they held in 1980. This marks three decades in a row that the party controlling the redistricting process in Florida failed to gain a single seat from it, despite the state's total number of districts growing by 66 percent over that same time period.

In order to understand what has happened in Florida over the last three decades, one needs to begin by putting Florida in context and understanding how the parties in control of each redistricting cycle choose their goals.<sup>32</sup> The mean of all the states' average competitiveness scores during this time period is 18.3 percent (that is, the average of all the averages). Florida's average district competitiveness has tended to hover around this middle ground (1980 17.4 percent, 1990 23 percent, and 2000 19.7 percent). As a result, there is nothing too exceptional about the state's level of competitiveness to suggest that it should be particularly susceptible to national party trends. The Democrats were in charge of redistricting in the 1980s while controlling 68 percent of the state legislature, and in the 1990s while controlling 58 percent of the

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<sup>32</sup> It may be tempting to simply point to national party trends as the cause of seats shifts in Florida during this time period. However, in doing so, one is suggesting that redistricting is a politically innocuous event that has no effect on party fortunes.

legislature. Over the last three decades, the average majority party across all states held 65.2 percent of legislative seats. The Republicans controlled the process in the 2000s and held 63 percent of the state legislature. All told, the controlling parties in the 1980s and 2000s were about average strength wise, while the Democrats in 1990 were below average.

Figure 3-1 provides predictions as to which goal parties will choose to pursue (i.e., maximize seats or protect incumbents) based on who controls the process and a party's domain of gains or losses. In all three redistricting cycles, Florida's majority party was in sole control of the process. In 1990 the Democrats were clearly in the domain of losses with control of just 58 percent of the legislature. Thus, the prediction would be risk aversion and the choice to protect their incumbents. This is exactly what occurs, as they reduce competitiveness by 4.6 percent. The 1980s and 2000s are a bit harder to read because the parties are about average when it comes to control of the state legislature. This amounts to a prediction of status quo protection (which as I argue in chapter 3 is akin to risk aversion). This, again, is exactly what they do. In both cases, the parties make very small changes to overall competitiveness, reducing it by .39 in the 1980s and just .18 in the 2000s.

Therefore, the goal each party chose to pursue was the risk averse option. Yet, they ended up producing congressional districts that had the exact opposite effect. The new districts put their own incumbents at great risk of losing, while handing all the state's gains from reapportionment over to the opposing party. Why did they do this? The answer presented here points to the unconscious process in the mind that drives

individuals' attitudes towards risk. Prospect theory provides an understanding of the external stimuli that correlate with risk averse and risk accepting behavior. Chapter 2 refines prospect theory's predictions for the particular context of congressional redistricting. It suggests that parties facing risky choices with a loss component will be risk accepting in the domain of gains and risk averse in the domain of losses.

Identifying proper proxy variables for how the choice context is being framed is critical for scholars attempting to apply prospect theory. This is typically the most difficult point in any prospect theory based research because there is little guidance as to what plays the framing role for individuals. In chapter 3, I identified two situations that, in a more abstract sense, make parties feel as if they are in a position of strength or weakness. These proxy variables are utilized to identify the domain of the parties (i.e., the frame). The first proxy variable predicts how much or how little parties will alter average district competitiveness and the second is whether or not the state gained seats from reapportionment.

### *Congressional Redistricting and the Psychological Approach Going Forward*

All told, the psychological approach utilized here has shone a new light on the redistricting process. It has provided leverage in an area that the more traditional approaches to institutional change cannot, namely an individual's willingness to accept risk. This has proven to be an important contribution as it has opened up new understandings of how the process works and how it results in real world changes in

who wins and who loses seats in Congress. Although this is a good first step, there is much left to do both with regards to understanding congressional redistricting specifically and a psychological approach to institutional development in general.

For congressional redistricting, the work presented in earlier chapters highlights the importance of risk propensity and bipartisan redistricting processes, but does not provide much explanation of what exactly is going on during bipartisan redistricting to help the majority party. There is something systematic happening, but more work needs to be done to decipher the causal process at work. The majority party could gain seats during bipartisan redistricting because when they are strong, they are risk averse and seek to protect their incumbents rather than to gain seats. That is not the case when the majority party is in sole control of the process. In that situation, the majority party might be risk accepting and seek to win even more seats. The result is that majority parties during bipartisan controlled redistricting are stopped from producing their own dummymander, whereas parties in sole control of the process are free to seek gains but are as likely to draw themselves out of seats as into them. Thus, it may be that bipartisan redistricting-- rather than restricting a party's ability to gain-- actually helps the party to gain by stopping it from getting too greedy.

The psychological approach itself also needs further refinement. In this work it is utilized in one particular context that is very well suited for its use. Thus, further applications outside the area of congressional redistricting are warranted. Also, it should not be assumed that this approach can only help in identifying goal choice. This

perspective could as readily be used to explain the causes of institutional change, which are the bread and butter of the traditional approaches to institutional development. In fact, this approach and prospect theory in particular could be quite useful in explaining institutional change. Institutional change is inherently risky, and the actors' willingness to accept risk is a critical factor in both determining which goal they will pursue during change and whether or not they seek change in the first place.

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## Appendix

### **Loss Aversion Replication**

*Question LA1 (N = 49):*

Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts. Imagine that you are the head of the Liberty party for your state. Liberty party is in the majority and as part of your duties you will be selecting a redistricting plan to go into effect for the next election. You consider two possibilities. The plans differ in two respects: the number of districts the Liberty party will safely win and the enthusiasm of party members, which depends on whether their particular district will be altered. In order to compare the two new plans, you have made the following table:

---

	<u>Party Member Enthusiasm</u>	<u># Safe Districts</u>
Current Plan	little enthusiasm	10
New Plan A (71%)	moderate enthusiasm	8
New Plan B (29%)	great enthusiasm	6

---

Which new plan do you choose?

*Question LA2 (N = 52):*

Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts. Imagine that you are the head of the Liberty party for your state. Liberty party is in the majority and as part of your duties you will be selecting a redistricting plan to go into effect for the next election. You consider two possibilities. The plans differ in two respects: the number of districts the Liberty party will safely win and the enthusiasm of party members, which depends on whether their particular district will be altered. In order to compare the two new plans, you have made the following table:

---

	<u>Party Member Enthusiasm</u>	<u># Safe Districts</u>
Current Plan	great enthusiasm	6
New Plan A (65%)	moderate enthusiasm	8
New Plan B (35%)	little enthusiasm	10

---

Which new plan do you choose?

**Reflection Effect Replication**

*Question RE1 (N = 45):*

Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts. Imagine that you are the head of the Liberty party for your state. Liberty party is in the majority and as part of your duties you will be selecting a redistricting plan to go into effect for the next election. Your party has won 8 seats for the past 12 years and you are considering two potential plans.

Please choose between these two plans:

Plan A: Your party wins 8 congressional seats with certainty. (71%)

Plan B: Your party has a 50% chance of winning 4 seats and a 50% chance of winning 12 seats. (29%)

*Question RE2 (N = 43):*

Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts. Imagine that you are the head of the Liberty party for your state. Liberty party is in the majority and as part of your duties you will be selecting a redistricting plan to go into effect for the next election. Your party has lost 8 seats for the past 12 years and you are considering two potential plans.

Please choose between these two plans:

Plan A: Your party loses 8 congressional seats with certainty. (47%)

Plan B: Your party has a 50% chance of losing 4 seats and a 50% chance of losing 12 seats. (53%)

### **Simple Interaction**

*Question Simple1 (N = 70):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature. As the majority party, Liberty will draw new congressional districts for the state. Your party (Liberty) has won 9 congressional seats in your state for the last 12 years. Experts believe that with careful planning and a favorable political climate, Liberty party could win a maximum of 11 congressional seats in the next election. There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will win 4 seats with

certainty and has 45.5 percent chance of winning 11 seats. Under plan B, experts believe that Liberty will win 6 seats with certainty and has a 27.3 percent chance of winning 11 seats.

Choose between the two alternative redistricting plans.

	<u>Likelihood of winning 11 seats</u>	<u># of guaranteed wins</u>
New Plan A (60%)	45.5%	4
New Plan B (40%)	27.3%	6

*Question Simple2 (N = 65):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature not by Congress. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature. As the majority party, Liberty will draw new congressional districts for the state. Your party (Liberty) has lost 9 congressional seats in your state for the last 12 years. Experts believe that with poor planning and an unfavorable political climate, Liberty could lose a maximum of 11 congressional seats in the next election. There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will lose at least 4 seats with certainty and has 45.5 percent chance of losing 11. Under plan B, experts believe that Liberty will lose at least 6 seats with certainty and has a 27.3 percent chance of losing 11.

Choose between the two alternative redistricting plans.

	<u>Likelihood of losing 11 seats</u>	<u># of guaranteed losses</u>
New Plan A (42%)	45.5%	4
New Plan B (58%)	27.3%	6

### **Complex Interaction**

*Question Comp1 (N = 62):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature not by Congress. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature and will draw new congressional districts for the state. Your party (Liberty) has traditionally won a majority of the state's congressional seats. During the last 12 years Liberty has held 8 of the state's 15 congressional seats. Experts believe that with careful planning and a favorable political climate, Liberty could win a maximum of 11 congressional seats during the next election.

There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will win with certainty at least 6 of the 15 seats and has a 18.2 percent chance of winning 11 seats. Under plan B, experts believe that Liberty will win with certainty at least 4 of the 15 seats and has a 36.4 percent chance of winning 11 seats.

Knowing that your party has traditionally won a majority (8) of seats, you are asked to choose between the two alternative redistricting plans.

	<u>Likelihood of winning 11 seats</u>	<u># of guaranteed wins</u>
New Plan A (52%)	18.2%	6
New Plan B (48%)	36.4%	4

*Question Comp2 (N = 60):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature not by Congress. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state's congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature and will draw new congressional districts for the state. Your party (Liberty) has traditionally won a minority of the state's congressional seats. During the last 12 years Liberty has held 6 of the state's 15 congressional seats. Experts believe that with careful planning and a favorable political climate, Liberty could win a maximum of 9 congressional seats during the next election.

There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will win with certainty at least 4 of the 15 seats and has a 22.2 percent chance of winning 9 seats. Under plan B, experts believe that Liberty will win with certainty at least 2 of the 15 seats and has a 44.4 percent chance of winning 11 seats.

Knowing that your party has traditionally won a minority (6) of seats, you are asked to choose between the two alternative redistricting plans.

Likelihood of winning 9 seats      # of guaranteed wins

New Plan A (45%)	22.2%	4
New Plan B (55%)	44.4%	2

*Question Comp3 (N = 62):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature not by Congress. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state’s congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature and will draw new congressional districts for the state. Your party (Liberty) has traditionally lost a minority of the state’s congressional seats. During the last 12 years Liberty has lost 7 of the state’s 15 congressional seats. Experts believe that with poor planning and an unfavorable political climate, Liberty could lose a maximum of 11 congressional seats in the next election

There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will lose with certainty at least 5 of the 15 seats and has a 28.6 percent chance of losing 11 seats. Under plan B, experts believe that Liberty will lose with certainty at least 3 of the 15 seats and has a 57.1 percent chance of losing 11 seats.

Knowing that your party traditionally has lost a minority (7) of seats, you are asked to choose between the two alternative redistricting plans.

	<u>Likelihood of losing 11 seats</u>	<u># of guaranteed losses</u>
New Plan A (81%)	28.6%	5

New Plan B (19%)	57.1%	3
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*Question Comp4 (N = 67):*

In the United States citizens elect representatives to serve in their state legislature. These voters also elect individuals to serve in Congress. Each member of Congress represents a district located in their home state. These district boundaries are drawn by the majority party in the state legislature not by Congress. Every ten years the majority party of each state is given the opportunity to redraw the boundaries of the state’s congressional districts.

Imagine you are a member of the Liberty party. Liberty party holds the majority of seats in the state legislature and will draw new congressional districts for the state. Your party (Liberty) has traditionally lost a majority of the state’s congressional seats. During the last 12 years Liberty has lost 9 of the state’s 15 congressional seats. Experts believe that with poor planning and an unfavorable political climate, Liberty could lose a maximum of 11 congressional seats in the next election

There are two new plans being debated by the Liberty party. Under plan A, experts believe that Liberty will lose with certainty at least 7 of the 15 seats and has a 22.2 percent chance of losing 11 seats. Under plan B, experts believe that Liberty will lose with certainty at least 5 of the 15 seats and has a 44.4 percent chance of losing 11 seats.

Knowing that your party has traditionally lost a majority (9) of seats, you are asked to choose between the two alternative redistricting plans.

	<u>Likelihood of losing 11 seats</u>	<u># of guaranteed losses</u>
New Plan A (67%)	22.2%	7
New Plan B (33%)	44.4%	5