Reconsidering the Great Compromise at the Federal Convention of 1787: Deliberation and Agenda Effects on the Senate and Slavery*

September 8, 2010

Abstract

Conventional accounts of the Federal Convention of 1787 point to the many different compromises made at the convention, specifically the Great Compromise on representation and the Three-fifths Compromise on slavery. Often these compromises are treated as separate events, the result of deliberation leading to moderation of delegate positions (presumably among the key states of Massachusetts and North Carolina). However, by applying the techniques of roll call analysis we find this traditional account is at best incomplete and probably misleading. While the Massachusetts delegation’s behavior seems consistent with a moderation hypothesis, we find evidence that the other crucial vote for the Great Compromise—from North Carolina—is inconsistent with moderation, but can be linked through the agenda to the Three-fifths Compromise over slavery, taxation and representation. We conclude by arguing that this reconsideration of some of the convention’s key votes should cause political scientists and historians to reevaluate how they see the compromises at the convention.

*This project benefitted from many who were willing to comment on the paper at various stages including a 2007 APSA panel organized by Keith Dougherty. We would like to single out, Calvin Jillson and Kevin Quinn who both commented on the project at crucial stages; John Aldrich and John Geer; and finally, the members of the Brigham Young University Political Science Seminar, especially Scott Cooper, Jay Goodliffe, Chris Karpowitz and most especially Matt Holland who read multiple drafts. We also appreciate funding from the BYU Political Science Department’s Constitution Fund established to provide for study of that vital subject, as well as funding from a McMillan Travel Grant at the University of Minnesota, College of Liberal Arts. And finally we appreciate the comments of three anonymous reviewers. Replication materials for this article may be found in the IQSS Dataverse: http://dvn.iq.harvard.edu/dvn/dv/satreier, or by contacting the authors.
On Monday, June 11, Roger Sherman urged the Federal Convention of 1787 to compromise on the sensitive but vital issue issue of representation. He suggested that the lower house of the legislature be apportioned according to population and that the upper house of the legislature ignore population differences and give an equal vote to each state. As each state delegation cast its vote, delegates must have realized that the vote would be very close: it lost by the narrow margin of a single state delegation (see column 1 of table 1). Representation by the free population in both houses of the legislature would be the rule of the convention for the first few weeks. This expectation changed on July 16 when the convention adopted the report of the Grand Committee which provided for proportional representation in the House of Representatives, but equal-state representation in the Senate (see the second column of table 1). This proposal passed by the most narrow margin possible: Connecticut, Delaware, Maryland, New Jersey and North Carolina voted for the proposal while Georgia, Pennsylvania, South Carolina, and Virginia opposed the proposal. Massachusetts was “divided.”

Since the convention rules held that a tie vote was not sufficient to pass a proposal (as opposed to maintaining the status quo), the divided Massachusetts delegation’s vote becomes one of the more important tie votes in history: it set the stage for the Senate.

Had Massachusetts not voted “divided,” or had North Carolina not switched sides, the proposal would have failed, and perhaps the prospect of a resolution on the representation issue would have died. Six weeks of debate over this issue had left tempers slightly frayed. It is difficult to imagine another six weeks of debate or an imaginative new proposal that would have solved the issue. This event is known to students of the convention as “The Great Compromise” (or the “Connecticut Compromise”). But what kind of compromise was it? A compromise where a few delegates were moderated their position to achieve a “meeting of the minds”? Or was it a compromise where the smaller states offered something tangible on the

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1 An equal number of Massachusetts delegates were on each side of the question. The outcome might have been different if the delegation had been odd-numbered for the July 16 vote.
proposals in exchange for the larger states (specifically Massachusetts and North Carolina) switching sides? What were the reasons? Why did the votes change between June 11 and July 16?

Conventional descriptions of this compromise often suggest that moderation or a meeting of the minds from a “deliberative assembly” (Garver, 1944) drove the compromise, but this picture of deliberative persuasion is obviously incomplete. By mid-July the small states had the votes to impose their will when Massachusetts and North Carolina switched sides. This much is known but the mechanics and motivations behind this compromise are of significant historical interest. Logically there are two possible causes for any shift in a state’s position: moderation of a state delegation’s position on the issue; or the structure of the agenda.\(^2\) In the next sections, we begin by reviewing the relevant scholarship and how it suggests some specific testable hypotheses in the roll call data. Subsequently, we turn to an explanation of the model, estimation and finally a discussion of the results including how the evidence matches up to our particular hypotheses.

Our aim is to combine the available historical knowledge from Farrand’s notes to the political science tools for the analysis of legislatures (ideal point estimation) in order to better understand the roots of the “Great Compromise.” Given the roll call record, which explanations seem most plausible? To do this well, we have chosen a new model of the constitutional convention that estimates both the positions of the state delegations and the positions of the proposals in the first six weeks of the convention. We believe the evidence from the roll call record suggests that both moderation (in the case of Massachusetts) as well as agenda effects (in the case of North Carolina) were crucial for the passage of the Great Compromise. What may be less appreciated is the apparently important role of slavery in the passage of the Great Compromise.

Given the continuing debates over interpretations of the U.S. Constitution, understand-

\(^2\)A third possibility is, of course, attendance. If a delegation—or a member of a delegation—was unavailable for a vote it could substantially change the outcome. In the case of the Great Compromise that appears not to be the case.
ing the political circumstances behind the decisions made by the founders is of paramount importance. When scholars on both the left and the right assert that their position is supported by the founding generation no effort should be spared to better understand those debates. In particular, when many public policy questions appear to hang on the matter of winning enough votes in the U.S. Senate we should want to understand whether the Senate was the result of a deliberate moderation in the views of the delegates who accepted the need for such an institution, or was it a bargain bought with a legislative trade realized in the roll call record?

**Deliberation and Moderation**

One traditional story of the Great Compromise involves some kind of deliberative\textsuperscript{3} persuasion leading enough delegates to moderate their positions to cause the shift between June 11 and July 16. Much previous analysis explicitly (or, more often, implicitly) takes the view that deliberation was the hallmark of the convention: “[W]ith occasional exceptions, the framers of the Constitution strove for accommodation and compromise (Nelson, 1987, p. 465).” The record of the convention certainly gives many examples of this spirit of compromise. On July 2, Charles Cotesworth Pinckney said he “did not entirely approve” the motion to accept equal-state representation in the upper chamber, but that “some compromise seemed to be necessary (Farrand, 1966, p. 511, Vol I).” Others, such as George Mason, Hugh Williamson and Elbridge Gerry, specifically urged a compromise in the spirit of conciliation.

The Grand Committee ultimately produced a complete report that proposed proportional representation in the lower chamber and equal-state representation in the upper chamber (the report also fixed representation totals in the lower chamber). On the debate before the key roll call vote was taken, Madison simply writes

\textsuperscript{3}The term deliberation can take on many possible meanings (Cohen, 1989; Remer, 2000). Here, we try to employ a testable version of deliberation (Mutz, 2008) that is most related to a moderation of delegation views.
On the question for agreeing to the whole {Report as amended &} including the equality of votes in the 2d. branch {it passed in the Affirmative} (Farrand, 1966, p. 15, Vol II)

He gives no flavor of debate indicating either that none occurred on that morning (possible, but unlikely since there were only four roll call votes taken: there was plenty of time) or that Madison chose not to record that debate. After listing the delegation positions, Madison goes on to repeat the compromise language, record some limited discussion of the language and report the subsequent roll calls calling for an adjournment. Despite this comparative silence, Madison does record that “on the morning following . . . a number of members from the larger States . . . met for the purpose of consulting on the proper steps to be taken in consequence of the vote in favor of an equal Representation in the 2d. branch (Farrand, 1966, p. 20, Vol II).” His notes make clear that the delegates from the large states were quite divided about how to proceed, some favored standing firm for proportional representation, while others favored conceding the point and moving on to other matters. Whether or not the debate was settled in the minds of the participants at that caucus, the issue of representation is never revisited: this vote seals the outcome.

With so little to go on, historians have necessarily been forced into broad interpretations of these events that rely on the previous weeks of debate. Jack Rakove describes the discussion of representation as “everything from heavy-handed threats and poker-faced bluffs to heartfelt pleas for accommodation, from candid avowals of interest to abstract appeals for justice (Rakove, 1987).” A careful reader can discern the general positions of the state delegations, but there is little to clarify the root causes of the Great Compromise.

In this void, scholars have tried to faithfully represent the complexity of the motivations and reasons behind the compromise. Deliberation, leading to a conciliatory moderation of positions. Frank Garver called the convention “a deliberative assembly” (Garver, 1944), saying that

Past experience, as well as political theory, was tested by reason and judgment.
The very give and take of debate, tempered by a spirit of open-mindedness, brought about many changes of view. Conciliation and compromise led to agreement. (p. 424)

Garver’s view of the importance of open-mindedness or conciliation has been endorsed, on some level, in a host of subsequent publications regardless of whether they praise or criticize the convention (Ohline, 1971; Jillson and Anderson, 1978; Hutson, 1987; Bestor, 1989; Keller, 1993; Knupfer, 1991; Ellenbogen, 1996; Rakove, 1996).

Gordon Wood, in his masterpiece, *The Creation of the American Republic, 1776 - 1787*, portrayed the convention as consciously choosing a bicameralism to restrain the large state from taking control of the government, “[b]y this mixture of states and people ... the Convention had actually created a new kind of balanced government (Wood, 1969, p. 558).” Passages such as this one reflect the idea that the convention—and, by extension these critical votes—collectively decided on a compromise. While Wood (and the others who employ similar language) certainly do not mean to imply any kind of unanimity, this deliberative account of moderation implies that minds were changed when at least some convention delegates came to believe that some form of compromise was the most just outcome. Matson and Onuf reflect this judgment when they write “But most of the framers came to recognize the legitimacy of state claims of constitutional protection—and the undesirability of giving the central government unlimited power .... Debate ... made the delegates ... willing to incorporate genuinely federal elements in their design (Matson and Onuf, 1990, p. 102)”

This idea—that some delegations were convinced of the rightness of the small state position—offers up a possible hypothesis. If individual minds were changed on the representation question, state delegation positions should show some evidence of a shift in the appropriate direction on that dimension of the debate. If we can find no such evidence of delegation movement, then the moderation hypothesis remains suspect.4 Table 1 leaves little

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4We recognize that there are other possible versions of deliberation at the convention. It is certainly possible that individual delegates may have come to believe that some compromise was necessary to ensure an agreement on a new constitution and voted accordingly on the final vote without leaving any other trace
room for the possibility of moderation leading to conversion: with only Massachusetts and North Carolina switching actual positions, deliberation explanations must focus on those two states. Because we cannot consistently access individual votes it is difficult to confidently point to individuals who could have caused the shift in votes. But we can determine whether state delegations shift positions within the convention by looking for roll call evidence that either North Carolina or Massachusetts moderated positions as the convention progressed.

**Agenda Effects**

The other possibility to consider is that the votes on June 11 and July 16 were not really the same, because the intervening agenda structure had altered the content of the convention proposals and agreements. In essence, North Carolina and Massachusetts may have not really “changed” at all. Despite their obvious similarities with respect to proportional representation (the key issue), the June 11 and July 16 votes are not exactly the same because they came at different points in the agenda. The delegations may have expressed similar preferences over proposals that had slightly different content.

One interpretation of the July 16 vote could essentially be a legislative bargain that involved a side-payment. Various scholars have put forth particular bargains that could certainly have influenced the voting. Forrest McDonald hypothesizes that a secret bargain was concluded on June 30 (McDonald, 1965). In his view Roger Sherman (Connecticut) and John Rutledge (South Carolina) agreed to push through the “Great Compromise” along with other matters pertaining to slavery. Staughton Lynd (1966) argues that the secret bargain was over slavery and the Northwest Ordinance, with an agreement to permit the unfettered admission of new states (under the bill being then considered in New York by the Confederation Congress) and also support the three-fifths clause.

But other scholars find the evidence for these bargains wanting. James H. Hutson (1987) of their altered thinking in the roll call record. But this is not clearly a falsifiable hypothesis and is, therefore, beyond the scope of what roll call analysis can illuminate.
concluded about these specific theories and the general attempt to interpret motives for the compromises that “neither traditional political historians nor quantifiers appear, in recent publications, to be able to present a clear explanation of what was happening behind the rhetoric on the convention floor (p. 419).” We must be somewhat reluctant to accept these claims without a clear *quid pro quo*, something not provided by either McDonald or Lynd. In the absence of that record we think it is more fruitful to investigate the roll call record than to accept the absence of evidence as testimony to the quality of the secrecy surrounding the possibility of side-payments.

No model could hope to clarify everything going on behind the rhetoric but a careful model can help illuminate which claims are true and which claims are false. We take seriously the notion that something beyond the speeches was required to shift the votes of Massachusetts and North Carolina. When the small states began caucusing to produce the New Jersey plan in order to split the large state coalition, their “strategy was directed . . . toward more calculated ends than reasoned persuasion (Rakove, 1996, p. 68).” Under this view, their aim was to find some sort of proposal that would simply be enough to draw away a large state delegation. This could be accomplished in one of two ways either by finding a *cross-cutting dimension* that would draw a few votes, or by *revising the proposals on the proportional representation dimension* in such a way as to increase the probability of attracting a vote from the large-state coalition.

The classic version of an agenda effect is the cross-cutting dimension that forces voters into thinking about the problem in two dimensions. For instance, when a U.S. Senator wanted to block the Defense Department from transporting lethal nerve gas within his home state, he argued that the issue was really about the constitutional power of the U.S. Senate to oversee foreign policy (Riker, 1986, see pp. 106-113). Another possible example is the way political entrepreneurs used the slavery issue to split the reigning regional coalition of the Atlantic states, the deep south and the northwestern territories. Slavery created a moral dilemma that realigned the politics along a north/south dimension (Riker, 1982, see
pp. 214-232). For our purposes, the question becomes a fairly simple one: is there evidence that a cross-cutting dimension that drew the votes of the Massachusetts and North Carolina delegations away from the large-state coalition? If we can find evidence of that possibility, it would support the idea of an agenda effect at the root of the Great Compromise. But it is not the only avenue for the agenda to affect the outcome.

The small states could have simply granted some point on the proportional representation dimension in order to attract a vote or two. Several possibilities present themselves. Part of the explicit compromise was the question of origination of money bills. The small states could have argued that the concession that the Senate would not be able to originate money bills was a serious enough concession to cause shifts in the votes of Massachusetts and North Carolina. This gets the verbal support of at least one crucial delegate: Elbridge Gerry who later said “[The Compromise] never would have been agreed to by the Committee, or by myself, as a member of it, without the provision (Farrand, 1966, see p. 265).” If we can find evidence in the model that North Carolina or Massachusetts would have been attracted by the proposal on money bills this possibility gains some significant support.

Another major possibility is slavery. Farrand dismisses this possibility, referring to the three-fifths rule as a “mere incident” to the Great Compromise (Farrand, 1913, p. 108). Historical treatments of the Constitution have largely followed his pattern of treating the compromises either as separate events largely unconnected to one another (Johnson, 1997; Foner and Garraty, 1991) or when they do note that the issues are connected because both are about representation they do not explicitly make the inference that slavery was vital for the roll call passage of the “great compromise” (McDonald, 1958; Bowen, 1966; Wood, 1969; Collier and Collier, 1986; Peters, 1987). Jack Rakove has suggested that slavery was vital at the Convention, but even he describes the compromises as “[t]wo divisions, two sets of compromises: these were what drove the politics of constitution-making at Philadelphia. There the ephemeral struggles between small and large states and the more durable and evil-fated rift between free and slave states defined the competing and conflicting interests that
the framers had to resolve (Rakove, 1996, p. 92).” Ironically, Rakove in that same volume describes some of the ways in which the two compromises were linked by arguing that as the delegates considered questions of representation and slavery, that “the more weight they gave to considerations of regional security” such as the need to perpetuate slavery for the southern states (Rakove, 1996, p. 75). The question will be finding evidence within the roll calls that either Massachusetts or (more likely) North Carolina was influenced by its delegation’s desire to perpetuate slavery.

The records of the convention are sparse enough that they permit many possible interpretations. Many traditional accounts emphasize a deliberation and moderation, but there is also a clear tradition suggesting the possibly vital role of the agenda. It is to the tools of roll call analysis—and the light they can shed on this question—that we now turn.

Methods

Social scientists have already begun using the tools of roll call analysis to analyze the convention. Their efforts have clarified much of the debate. But we believe that tackling the specific question of the causes behind the “Great Compromise” implies a new model that permits analysts to estimate not just voting coalitions or general patterns, but the specific locations of state delegations and proposals offered at the convention.

Previous Modeling Efforts

Four predecessors have tried to comprehensively model the voting patterns and coalitions at the federal convention of 1787: Calvin Jillson (2002); Adam Slez and John Levi

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5One other possible interpretation of the reasons behind the Great Compromise could be the question of the size of the Senate. This argument suggests that the votes changed because a few key delegates worried about the implications for Republican government of a relatively large upper chamber Wirls and Wirls (2004). But even its authors do not claim to have found a “smoking gun,” and since there is no direct roll calls that can test this question we do not attempt to directly test for it in the analysis below. The general claim that a small Senate to enhance deliberation and serve as a check on the more popular branch seems sound to us, but not directly falsifiable as a proximate cause of the Great Compromise.
Martin (2007); Keith Dougherty and Jac Heckelman (2006); and John Londregan (1999a; 1999b). Our work is very much in the spirit of theirs, but differs in important respects.

Jillson offered a factor analytic model that identified the voting coalitions—not a scaling model of votes—for various periods of the convention. Instead of modeling votes, he fits a series of one-dimensional factor analyses — each one covering exactly 100 votes, but each solution shifted by 20 votes from its closest neighbor (see pp. 26-34 for a specific discussion of his methods). Instead of the 100 votes as the observed indicators and the states defining the observations, the states are the items and the votes define the observations (defining a “Q-factor” analysis). For each segment of votes, Jillson estimates a two-dimensional exploratory factor analysis on the pairwise correlation matrix of the states votes (excluding divided votes and absences). States loading high on one “dimension” constitute a coalition, with the states that load on the other dimension the opposing coalition.

Jillson’s approach is a very dynamic one, analogous to a series of snapshots of the convention debate. Jillson examines the structure of the successive factor analyses, identifying when the states load on different dimensions, forming new coalitions. Jillson concludes that five periods could describe the convention, based on changes on which states load on the factors. Based on the content of the votes for these periods, he identifies the predominant issues as: an early debate over an extended vs. a small republic; the June and July debate over control of the legislature; an August debate over the scope of the national government; an August and September debate over state integrity and federalism; and, in the final weeks of the convention a debate over the control of the executive and the senate.

Mindful of the strengths of Jillson’s dynamic approach we believe it is fundamentally limited in two ways. First, because Jillson never models votes and only identifies coalitions he is not able to analyze any specific roll call, merely collections of them. Second, because Jillson focuses on state coalitions that change over time his identification of the dimensions with time periods may be too restrictive an assumption. We were strongly guided by Jillson’s careful work on the coalitions in June and July that fought over control of the legislature.
And, because our maps of the convention largely track his we are confident that our model is picking up an important cleavage in the debate, but the added power in our model of analyzing specific roll call votes and include estimates of the proposal positions allows us to go much further.

Slez and Martin’s work is the closest to Jillson’s. They use multidimensional scaling to produce pictures of five periods of the convention that are very similar in content and spirit to the images offered by Jillson (see pp. 50-62 for their discussion of periods). Their approach is to estimate the Euclidean distance between the states’ vectors of votes in each period, specifying two dimensions. They apply both metric and nonmetric scaling to their five periods, arguing that the meaning of a roll call vote is contingent on its placement in time. We agree with their emphasis on time, although we would refer to “time” as the unfolding agenda. Their interpretations across periods also rely on the rotation of the map in each period to be similar to the map in other periods. Finally, their method also avoids any estimation of the proposal positions, a crucial element for analyzing specific votes.

Dougherty and Heckelman (2006) present an ideal point model using the optimal classification algorithm of Poole (2000) to estimate ideal points in two dimensions, but without any of the period effects (they use all of the votes and ignore time effects). Their specific purpose is to examine the role of Sherman at the Convention, concluding that he was a pivotal delegate. Similar to the other cases, their model eschews estimation of proposal positions, though we find that our estimation of the state positions is broadly comparable to theirs.

Londregan provides an improved approach to estimating positions of the state delegations. Londregan uses an item-response model—very similar to the method implemented below—in order to place the state delegations. His model also incorporates some information about the proposals in order to place a few individual delegates. Londregan is also concerned with changes in positions across the debate (i.e., delegations that shifted positions as the debate progressed). In order to solve this he splits the convention into two parts and assumes that the first half (up until July 16) concentrates on the nature of representation in
the fledgling government and that the second half (the rest of the convention) concentrates on the powers of the government. He then estimates an item response model for each dimension (separately) and reports the estimates from each period. In spirit, our approach is closest to Londregan’s but we eschew his restrictions on time, preferring instead to code individual votes as fitting onto the dimensions of representation and scope and power (similar to Londregan’s chosen dimensions, but without his timing restrictions). Furthermore, while Londregan incorporates information about the agenda structure, the positions of the proposal and status quo points are identified by the restrictive assumption that the proposal position is identical to the position of the proposer. Instead, we identify the proposal and status quo positions based on the structure of the agenda.

In general, we agree with previous work that concludes the convention has multiple dimensions (perhaps as many as five, but certainly greater than two). However, that is only true of the entire set of convention votes. When focusing on the votes up through July 16 (as we do here) the dimensionality appears to be well-captured by a two-dimensional effort. It is to that model of the convention that we now turn.

**Our Model**

We estimate the positions of the states using an ideal point model based on a spatial model of voting Poole and Rosenthal (1997); Clinton, Jackman and Rivers (2004). In spatial models of voting, the legislator considers two positions, represented in $d$ dimensions of an ideological space: the “Yea” (bill proposal) position $\omega_j$ and the “Nay” (status quo) position $q_j$, for $j = 1, \ldots, m$ roll calls. The utility for the proposal and status quo are functions of the distance from the ideal point; utility decreases for alternatives further away from the ideal point. The legislator votes “Yea” if $U_{ij}(\omega_j) > U_{ij}(q_j)$, and “Nay” otherwise. The utility
functions are

\[ U_{ij}(q_j) = -\|x_i - q_j\|^2 + \nu_{ij} \]  
\[ U_{ij}(\omega_j) = -\|x_i - \omega_j\|^2 + \eta_{ij}. \]  

with distance measured by the square of the Euclidean norm \(\|\cdot\|\). The voting decision can be represented with the latent variable model

\[ y^*_{ij} = U_{ij}(\omega_j) - U_{ij}(q_j) + \epsilon_{ij} \]  

where \(\epsilon_{ij} = \eta_{ij} - \nu_{ij}\) and \(\Pr(y_{ij} = \text{“Yea”}|x_i) = \Pr(y^*_{ij} > 0)\).

For this particular model, the first dimension is “proportional representation”—the debate over the nature of representation which centered on such issues as whether or not the legislature’s apportionment would be based on population or the equality of the states, but also included such things as the terms of representatives and other related matters. The second dimension is the “scope and power” of government—the debate over federalism and the centralization of power. These dimensions were identified by all of the previous modelers cited in the section above (Londregan, 1999a,b; Jillson, 2002; Dougherty and Heckelman, 2006; Slez and Martin, 2007). Given the literature (and the historical literature also emphasizes these issue dimensions) we think this is a reasonable choice, but obviously other analysts may wish to make different modeling choices. To better clarify the dimensions, we restricted many of the votes to matter only on one of the two dimensions. The coding of these votes is available upon request.

The typical implementation of this model, such as in Clinton, Jackman and Rivers (2004) and Martin and Quinn (2002), do not estimate the proposal and status quo parameters.

\[ \text{In three dimensions, } \|x_i - q_j\| = \sqrt{(x_{i1} - q_{j1})^2 + (x_{i2} - q_{j2})^2 + (x_{i3} - q_{j3})^2}. \]
directly. Instead, a reduced form model is estimated:

\[ y_{ij}^* = \beta_{j1}x_{i1} + \beta_{j2}x_{i2} + \cdots + \beta_{jd}x_{id} - \alpha_j + \varepsilon_{ij} \]  

(4)

where \( \beta_{jd} = 2(\omega_{jd} - q_{jd}) \) and \( \alpha_j = \sum_{k=1}^{d}(\omega_{jk}^2 - q_{jk}^2) \). This model is a standard item response model (IRT), used frequently in the evaluation of educational testing, where the coefficients \( \beta_{jd} \) are the discrimination parameters for roll call \( j \) (Johnson and Albert, 1999).

One limitation of this model is that the progression of the agenda is ignored. One can scramble the ordering of the votes, yet the DW-NOMINATE (and CJR) estimates will remain unchanged. Clinton and Meirowitz (2001, 2004) extend this model by incorporating the agenda directly into the estimation.\(^7\) First, for vote \( j \), if proposal \( \omega_j \) passes, then the new status quo point equals this proposal: \( q_{j+1} = \omega_j \). If \( \omega_j \) fails, then the status quo remains unchanged: \( q_{j+1} = q_j \). Second, if a proposal does not concern dimension \( d \), even if \( \omega_j \) passes, the coordinates of the status quo for irrelevant dimensions will remain unchanged: \( q_{j+1,d} = q_{j,d} \). In the canonical ideal point model, these constraints are not imposed. In the statistical model, each voting option (whether currently a status quo or proposal) is represented by an element of the parameter vector \( \theta \). The parameters \( q_j \) and \( \omega_j \) are mapped into \( \theta \), indexed by \( y(j) \) and \( n(j) \), where \( q_j = \theta_{y(j)} \) and \( \omega_j = \theta_{n(j)} \).\(^8\) By imposing the previously mentioned constraints inherent to the spatial voting model, one can directly estimate the structural parameters (status quo points and proposals), instead of the reduced form parameters \( \beta_j \) and \( \alpha_j \). The model is now

\[ U_{ij}(q_j) = -\|x_i - \theta_{n(j)}\|^2 + \nu_{ij} \]  

(5)

\[ U_{ij}(\omega_j) = -\|x_i - \theta_{y(j)}\|^2 + \eta_{ij} \]  

(6)

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\(^7\)Jeong, Miller and Sened (2009) provide a recent implementation of this type of model applied to a modern Congress.

\(^8\)Figure 1 in Clinton and Meirowitz (2004) illustrate the indexing required of the parameters.
with

$$y_{ij} = \|x_i - \theta_{n(j)}\|^2 - \|x_i - \theta_{y(j)}\|^2 + \varepsilon_{ij}$$

(7)

Naturally, for modern legislatures where single votes may impact many policies simultaneously, such restrictions are difficult to impose (though perhaps not impossible for a specific issue such as health care policy). For Clinton and Meirowitz, the approach works well in the 1st Congress, where the primary issues considered are the location of the capital and the assumption of state debts. Bills propose specific changes to these areas, and irrelevant proposals are easily removed. The Constitutional Convention has a more varied agenda, but the proposals are very specific and the number of substantive subjects is limited. Procedural votes, since they do not affect the status quo if passed, are excluded. All unanimous votes are removed as well, along with any votes that are unanimous, except for one divided vote. Some of the unanimous votes could conceivably be used, as long as both the status quo and proposal positions appear in enough non-unanimous votes. In practice though, these votes cause problems for the estimation.

Because the delegations voted by state, there is a complication due to aggregation. While this ideal point model is often applied for such actors\(^9\), the use of this model does require some caution when discussing the “ideal point” of state \(i\). In particular, we will refer to \(x_i\) as the “revealed position,” since \(x_i\) is a reflection of the delegation decision making process, which does not necessarily result in the revelation of the median or mean position of the delegation. An estimate of \(x_i\) with a low score on both representation and scope and power reflects a state delegation with a decision making process that results in actions supporting equal voting among states and limited national government.

Another complication with the Constitutional Convention data is the presence of divided votes. Since the states vote by delegation, it is possible for states to become deadlocked on any particular vote. How should these votes be addressed? One cannot feasibly treat each

\(^9\)For an example regarding countries’ positions from roll calls in the U.N. General Assembly, see Voeten (2004).
vote as an ordered or unordered indicator, since the number of divided votes are indeed rare. For votes with no divided votes, one could not separately estimate divided vote coefficients (in unordered models) or vote specific thresholds (in ordered models). Consequently, the approach taken in all previous analyses has been to exclude the votes as missing. Of course, this “throws out” some information about the states revealed positions. In addition, the most important vote in the Convention, vote 156 (on the Great Compromise), is partly decided by Massachusetts switching from “Nay” to “Divided.” Furthermore, it would be unlikely that these thresholds could be considered identical across state delegations. Some states were more likely to be divided than others. One obvious factor was whether the delegation was small or large, odd or even. Also, some delegations had several opposing state political factions represented.

We express the stalemate within the delegation as the delegation split evenly between “Yea” and “Nay” positions. The resulting behavior results in a revealed position close to the cutline, the closeness measured by parameter $\delta$. Since some states are more likely to be divided than others, we estimate separate $\delta_i$ for each state. Consequently, if two states have the same $x_i$, the state with the larger $\delta_i$ will be more likely to vote “Divided.” Following Sanders (1998, 2001), the decision rule is,

$$y_{ij} = \begin{cases} 
\text{“Yea”} & \text{if } U_{ij}(\omega_j) - U_{ij}(q_j) > \delta_i \\
\text{“Nay”} & \text{if } U_{ij}(\omega_j) - U_{ij}(q_j) < -\delta_i \\
\text{“Divided”} & \text{if } -\delta_i \leq U_{ij}(\omega_j) - U_{ij}(q_j) \leq \delta_i 
\end{cases}$$

This is equivalent to an ordered model, with state specific thresholds that are common across votes, with the restriction that $\tau_1 = -\tau_2$. As long as the state has been divided on a roll call at least once, $\delta_i$ is estimable. This is a key feature of the model since, to our knowledge, no one has ever attempted to deal with divided votes in the past, either tossing them out or otherwise ignoring them. But any estimation of the ideal points needs to include this
obviously important feature of debate—especially given the importance of Massachusetts’s divided vote.

Identification and Estimation

Much like factor analysis, certain restrictions must be imposed to ensure rotational invariance. Similar to a confirmatory factor analysis, the model can be identified with appropriate restrictions on the vote parameters. We fix the proposals on votes 40 (each state receives one vote in the Senate) and 41 (proportional representation also for the Senate) on the first dimension ($\theta_{22,1} = -1$ and $\theta_{23,1} = 1$) and proposals for votes 29 (members of the House elected by state legislatures instead of people) and 34 (national negative of executive) on the second dimension ($\theta_{17,2} = 1$ and $\theta_{19,2} = 1$). In addition to imposing the relational contraints implied by the agenda (successful proposals become the next status quo point, and status quo points remain until a successful proposal), we restricted many votes (including votes 34, 40 and 41) to load only onto one of the dimensions in each model, based on the content of the vote (e.g., only concerns proportional representation or scope and powers). 25 of the 92 votes analyzed propose changes in both dimensions. 24 votes constitute changes only on the proportional representation dimension, and 43 only concern scope and powers.

Given the large number of parameters in the posterior distribution, the non-standard form of the joint distribution, and the difficulty in estimating the parameters jointly using classical methods of maximum likelihood, we work in a Bayesian setting, using Markov chain Monte Carlo methods (See Johnson and Albert (1999) and Jackman (2009) for a survey of these methods and their applicability to IRT models). The likelihood is

$$L(\theta, x, y | Y) = \prod_{i=1}^{N} \prod_{j=1}^{M} \prod_{k=1}^{3} [\Lambda(\tau_{k,i} - (U_{ij}(\theta_{y(j)}) - U_{ij}(\theta_{n(j)})) - \Lambda(\tau_{k-1,i} - (U_{ij}(\theta_{y(j)}) - U_{ij}(\theta_{n(j)})))] I(y_{ij} = k)$$ (8)

where $\Lambda(\cdot)$ is the logistic distribution, $\tau_{1i} = -\delta_i$, $\tau_{2i} = \delta_i$, with $\tau_{0i} = -\infty$ and $\tau_{3i} = +\infty$.$^{10}$

$^{10}$Absences can simply be excluded, since the measurement model here assumes local independence—the
The posterior distribution is

\[ p(\theta, x, \delta | Y) = L(\theta, x, \delta | Y)p(\theta)p(x)p(\delta) \]  \hspace{1cm} (9) \]

The prior densities for the parameters are assumed to be independent. Each unconstrained element of \( \theta \) has a \( N(0, 1) \) prior distribution. The prior distribution for each unconstrained \( x_i \) is \( N(0, 1) \). The priors for elements of \( \delta \) are diffuse Gamma(0.1, 0.1) distributions. We implement this MCMC scheme WinBUGS, using the Metropolis-Hastings sampler\(^{11}\) for estimation of state delegation positions (\( x \)) and proposal locations (\( \theta \)) with normal proposal density (Lunn et al., 2000).\(^{12}\)

**Results**

Before turning to a discussion of the specific roll call votes, we want to examine the validity of the model to understand how well it has captured the convention. The left panel of figure 1 displays the estimated positions described by the previous analysis. The results broadly confirm previous efforts and illustrate the division between the large and small states. Connecticut, Delaware, Maryland, New Jersey and New York are grouped in the left half of the space, consistent with their demands for equal-state representation. States demanding proportional representation can be found in the right-hand side of the space (ignoring periods for now): Georgia, Massachusetts, North Carolina, Pennsylvania, South Carolina and Virginia.

\[ \text{[Figure 1 about here.]} \]

\(^{11}\)Slice sampling is used to estimate the \( \delta \) parameters.

\(^{12}\)The sampler had a burn-in of 179,000 iterations, with 500,000 samples (thinned by 50). Only 7 proposal parameters (out of 150 parameters) fail the Geweke diagnostic test for stationarity, short of the 5\% one would expect to fail randomly; all but one of the state and division parameters pass, as well as all but 5 of the 118 proposal parameters. All of the parameters pass the Heidelberger and Welch diagnostic for stationarity.
The second dimension of the graphic pertains to the scope and power of the government. Virginia, Pennsylvania and Delaware all generally favored a much more powerful centralized government than did the other states (each of those three states actually voted for a national negative over state laws). The southern states can be seen in the lower right-hand quadrant. Despite their affection for proportional representation (a generally nationalistic position) they apparently did not favor an extremely powerful government and tended to vote as a bloc against any proposal to give the national government power over slavery or excessive regulation of trade and commerce. Connecticut and New Jersey also take fairly anti-centralization positions, consistent with their votes against such things as national negatives and strong executive powers.

To better assess the model fit, we calculate, for each vote, Bayesian $p$-values from the posterior predictive distribution using a test statistic based on the number of “Yea” votes cast, with the $p$-value reflecting the probability the number of “Yea” votes predicted by the model is greater than the actual number of “Yea” votes.\(^\text{13}\) Only 10 of the 92 votes have extreme $p$-values (defined as less than 0.05 or greater than 0.95), indicating a poor fit on those votes.\(^\text{14}\) Almost all of these votes are lopsided and relating to minor issues (eligibility of office holders, stipends, length of time between censuses) and a vote confirming previously passed amendments on the number of Representatives apportioned. Only one, vote 39, concerns an important substantive issue (ratio of representation based on all free persons and 3/5 of all slaves). Later votes related to this particular issue are predicted well, and this particular vote occurs before representation in the Senate is considered. As a final check of the goodness of fit we estimated the percent correctly predicted. Against the baseline of predicting only “Yea” votes where 52.5 percent of the votes would be correctly predicted, our model correctly classifies 66.4 percent of the votes (64 percent of the “yea” votes and 77 percent of the “no” votes), a substantial improvement.

\(^{13}\)See (Gelman et al., 2004, pp. 162-163) for a summary of Bayesian test statistics and $p$-values.
\(^{14}\)Votes 39, 48, 53, 60, 72, 74, 87, 97, 129, and 144.
In sum, this picture of the debate is broadly consistent with most previous modeling efforts and the available measures of goodness of fit suggest that the model does a good job of capturing the voting dynamics. Despite important differences in methodology, this picture closely corresponds to the work of Jillson, Londregan, Slez and Martin, as well as the scaling model of Dougherty and Heckelman. Minor differences are probably due to the distinctions in terms of the period estimated—this model focuses on the period leading up to the “Great Compromise” and does not consider convention votes after July 16. It is encouraging that our model is consistent with other work. And it is worth noting that this is the first model to try a complete multidimensional estimation of the delegate positions and the proposal locations. If this model suggested patterns at odds with the previous scholarship we would be relatively less confident in the model. But, satisfied that our general map of the events leading up to the compromise seems relatively straightforward, we turn to the question of explaining the compromise via the evidence in the roll call record.

The Deliberation and Moderation Hypothesis

It is, of course, possible that at the last moment some members of the Massachusetts and North Carolina delegations simply decided that the small states deserved some kind of equal representation and accordingly voted that way. But we should be clear that no model with error could detect such idiosyncratic behavior and without clear documentary evidence it is a difficult hypothesis to really confirm. More importantly, this sort of account is not really consistent with the conventional story of the convention that speaks of conciliatory gestures toward moderation. If this is a stand-alone vote unconnected with the rest of the agenda then nothing but a clear historical record could explain it (and to our knowledge no one offers such a smoking gun). But if moderation is the key then we should observe a temporal shift in the positions of the Massachusetts and North Carolina delegations.

To test this possibility, we divide the convention into periods. If the positions of the states shift in ways consistent with the deliberation and moderation hypothesis we will have
support for the importance of moderation on the ultimate compromise. If we find no such effects, then, while we may not be able to rule out the possibility that a few individual minds changed in the breach, we can say that delegations did not moderate their positions consistent with deliberation and conciliation.

Selecting the periods is obviously important, but luckily the convention’s structure gives some guidance on how to divide into periods. At the outset the delegates decided to begin their discussions in the Committee of the Whole. As Larson and Winship (2005) recently put it “[T]his procedure for the proposed Constitution gave delegates the opportunity to consider each element of it at least twice—one in the Committee of the Whole and then in Convention—and allowed for them to experiment with new ideas, especially at the committee stage (p. 15).” This gives a relatively clear benchmark (June 20) for the two periods. Before that time, the delegates were essentially always in Committee of the Whole. After that period they were in Convention. Using this historical fact of the convention we divide the first six weeks into two periods, based on whether or not the delegates were in Committee or in Convention.

The right panel of figure 1 displays the positions of the states allowing Georgia, Massachusetts and North Carolina to shift for the final period on the representation dimension (denoted by GA2, MA2 and NC2). These states (and no others) were permitted to shift on the following grounds: Massachusetts and North Carolina appeared to change their positions on the main dimension of representation; Georgia’s delegation was substantially different at the later vote. The results suggest that both North Carolina and Georgia moved to the right on proportional representation. In other words, they dug in their heels about questions of representation, perhaps because of their high hopes for future population gains (Rakove, 1996). It appears that as the convention wore on, the two states were even more likely to stake out positions against equal state representation.

15We have estimated models where all states except New Jersey and Virginia shift positions (some states need to remain constant for identification purposes). The substantive conclusions do not change in the slightest.
On the other hand, the estimated probability that Massachusetts moved to the left is 0.88. This shift is clearly consistent with moderation (Rakove, 1996; Wirls and Wirls, 2004, and many others describe the story of the Massachusetts delegation in more detail). When we allow Massachusetts to shift on the proportional representation dimension the predicted probability of a vote against the compromise falls from 58.2 percent to 43.7 percent, a substantial change clearly consistent with a story of moderation as conventionally told.

With regard to Massachusetts, Madison records that Gerry and Strong voted for the proposal, while King and Ghorum voted against the Grand Committee compromise. Presumably either Gerry or Strong (or both) voted for proportional representation in the earlier vote on June 11. Neither of their positions at that time is clear enough to be absolutely certain. Whether or not one or both delegates switched is irrelevant to the final outcome: Massachusetts was evenly divided. Further speculation about the moderation hypothesis and its connections to the documentary record are beyond the scope of this paper—though we hope that scholars will accept the evidence here as a help in analyzing the writings of these delegates. Suffice it to say that both the very limited documentary evidence and the roll call estimates admit of the possibility of moderation on the part of the Massachusetts delegation. But the available evidence for North Carolina’s switch is flatly inconsistent with that. So we must look elsewhere to explain North Carolina’s complete switch from favoring proportional representation to opposing it. For that, we turn to the agenda structure.

**The Agenda Structure Hypothesis**

We can begin by ruling out the possibility of a cross-cutting dimension. Considering the two dimensions estimated here (“proportional representation” and “scope and power”)—dimensions that have been widely used by others either for the convention as a whole (Londregan, 1999a,b; Dougherty and Heckelman, 2006) or for this period (Jillson, 2002; Slez and Martin, 2007)—we see little evidence for a cross-cutting dimensional effect. Consider that North Carolina’s estimated position on proportional representation is almost exactly in the
middle of the large-state coalition (see figure 1), leaving little room for a proposal on the scope and power dimension to persuade North Carolina without leaving a trace on other delegations. But what about the possibility of a third dimension?

To deal with this possibility we evaluated a three-dimensional model that included a specific slavery dimension (the other two dimensions would remain the same in that model). But we could find no evidence that this dimension was specifically affecting North Carolina—in part because there were only seven votes directly on the slavery dimension, and when we examined those votes it appeared that they could best be captured on the proportional representation dimension (which was the conclusion of all of our different modeling attempt for this period of the convention and by the literature cited above). We accordingly reject multiple dimensions beyond these first two as the best explanation for the shift in North Carolina’s vote and restrict ourselves for the balance of the paper to this two-dimensional model.

This leaves us with one final possibility to check: that the substance of the votes changed in ways that permitted the small state coalition to attract North Carolina with a revised proposal on the proportional representation dimension. The left panel of figure 2 shows the key proposal locations from votes on June 11 and July 16 (note that the right panel displays the 95% HPD intervals on the proportional representation dimension). The first vote on June 11 was the proposal to base representation in the first branch of the legislature on proportional representation by population (in line with a position offered by Sherman). This vote passed easily—only New York, New Jersey and Delaware voted against it—establishing the policy position found at point $6/11 SQ$ on the graph. But when Sherman followed up on that success proposing that “each State shall have [one] vote in the 2d. branch” (Farrand, 1966, p. 201, Vol I) (the proposal is denoted Equal on the graph) the vote failed with only the five small states supporting it—the six large states in opposition. James Wilson of Pennsylvania and Alexander Hamilton of New York immediately proposed proportional representation in the lower house (the proposal is denoted Prop on figure 2) persuading the
convention with exactly the same vote divisions as went against the proposal Equal.\textsuperscript{16}

[Figure 2 about here.]

At this point, the small states were seemingly defeated. Though there were additional votes on June 29 and July 2, the result did not change. Returning to figure 2, on the right, just above the position of Prop, can be seen the July 16 SQ: despite a month of voting the result of the convention remained essentially unchanged. But on that day the status quo was challenged by a new proposal, clearly closer to the large states on the proportional representation: GC, the Great Compromise proposed by the Grand Committee, a proposal that is clearly to the right of the equal representation proposal offered by Sherman earlier and much closer to the large states in general and North Carolina in particular (note the error bars in the right panel). Because it is so different from the June 11 vote, it is clear that the small states manipulated the agenda in some way to make this July 16 proposal more palatable to the large states.\textsuperscript{17} The question is what in the proposal accomplished this?

One possible reason for the compromise was the origination of money bills. However Madison “could not regard the exclusive privilege of originating money bills as any concession,” believing it would “have no effect (Farrand, 1966, Vol. I, p. 527).” This proposal had been offered previously in the convention (vote 61 on June 13). But it was voted down by a margin of three votes to eight. The model estimates North Carolina’s probability of supporting that stand-alone measure as only 11.8 percent implying that North Carolina was not deeply interested in this provision. It seems unlikely, given the attitude of Madison and North Carolina’s past voting history on the issue, that this was a decisive piece of the puzzle. Instead we have to look at the rest of the agenda that unfolded over the next few days.

\textsuperscript{16}Not every state is estimated perfectly. The model predicts that Pennsylvania would have voted against proportional representation, though Pennsylvania in fact voted for that proposal. Any model is estimated with error, and we cannot expect a perfect fit especially with data this coarse—though we think that our model captures the essential features of the debate. Trying too hard to force the estimates to fit our preconceived notions of how the convention would proceed would hardly be a good grounds for a test of anything.

\textsuperscript{17}Note that because the two proposals are not at exactly the same position on the scope and power dimension, the cutting line for the great compromise vote is at a slight angle.
to see what proposals are most likely to have pushed North Carolina towards a vote for the Grand Compromise.

Table 2 displays the votes that immediately preceded the vote on July 16, including a short description of the content, the model’s estimate of the relevant probabilities and then the state’s actual vote. It is immediately clear that North Carolina was generally in favor of most of the items debated as part of the eventual compromise: the idea of a census, the proposal to link taxation to the census and the eventually the final vote on the compromise. Intriguingly, North Carolina votes against the proposal to count all persons—as opposed to the three-fifths rule (displaying their commitment to that rule). But probabilities alone will not reveal the story; we must also examine the locations of the proposals with respect to North Carolina (see figure 2).

The Great Compromise was not simply a clean vote on representation. When GC is proposed it includes a number of items including slavery and the three-fifths compromise, the manner of the census, and the ability of the national legislature to regulate the rule of representation in the future. Beginning on July 11 (see vote 132 in Farrand) the delegates had been arguing over the method of the census and who exactly would be counted. The Grand Committee’s proposal at that point contained two major parts, enactment of Sherman’s proposal to have proportional representation in the lower house but also an apportionment of initial representation. From July 11 to July 13 the details of this representation proposal are hotly debated, but the substance is rarely if ever significantly changed. But on each of these days northerners brought up objections to the counting method and the proportion of slaves accepted into the count. While all of this was going on, the southern states must have grown more and more nervous.

Vote 143 began the debate over the timing of the census, but most of the debate centered around how the census would work, not really its timing. By this point in the debate the Southerners had reached a boiling point and began to worry, in the words of Mr. Davie from
North Carolina, “that it was meant by some gentlemen to deprive the Southern States of any share of Representation for their blacks.” He went so far as to say that “N. Carola. wold never confederate on any terms that did not rate them at least \(\frac{3}{5}\) (Farrand, 1966, Vol. I, p. 593).” Davie, and presumably others, wanted explicit guarantees for slavery, but the north was reluctant. Gouvernor Morris argued for a census rule that would allow the national legislature to “regulate Representation according to population & wealth (Farrand, 1966, Vol. I, p. 593),” to which the Southerner’s replied that “property in slaves should not be exposed to danger [from the national government] (Farrand, 1966, Vol. I, p. 593-594).”

Rakove describes this exchange by saying that Morris argued that it was “better to trust to a future legislative discretion that would surely take the value of slaves into account .. . . [r]emarks like these could only prompt southern delegates . . . to favor a rule explicitly linking representation and slavery (Rakove, 1996, p. 72).” James Wilson of Pennsylvania noted that

\[
\text{[L]ess umbrage would perhaps be taken agst. an admission of the slave into the Rule of representation, if it should be so expressed as to make them indirectly only an ingredient in the rule, by saying that they should enter into the rule of taxation: and as representation was to be according to taxation, the end would be equally attained (Farrand, 1966, Vol. I, p. 595)}
\]

Wilson wanted to find a compromise that gave the South what it wanted without explicitly discussing slavery in the Constitution. If representation could be governed by a rule of taxation that was governed by the three-fifths rule, slavery would be only an “ingredient” of the compromise without being an explicit part of it. At the end of this day (July 12) the delegates eventually agreed to his version of the resolution (see vote 147). Howard Ohline puts it this way, “James Wilson had achieved a political marriage of the slave interest with the ideals of . . . popular republicanism (Ohline, 1971, p. 581).” In doing so, Wilson inextricably links slavery and the Senate, tying them together in the bargain that permits the
Federal Convention to move past this seemingly unbridgeable divide to finish the proposed Constitution.

Figure 3 displays the progression of the key votes just before the vote on the Great Compromise. The two proposals that make the most difference—in terms of moving the proposal closer to North Carolina’s position are the votes on census and taxation, especially votes 147 and 150. Indeed, according to the model these votes are more important than the vote on the overall clause that included the three-fifths compromise. So what was it about these taxation votes that could have made so much difference?

[Figure 3 about here.]

In the model, Vote 147 moves the proposal in the direction of North Carolina, but it is really the proposal in vote 150 (which happened on July 13) that appears to move it even further in the direction of North Carolina increasing the probability of a North Carolina vote on the Great Compromise. Note the lower portion of figure 3 that indicates it is only with this proposal—vote 150—that the estimated positions of the proposal and North Carolina actually overlap.

On July 13, Gerry offers two proposal on taxation, saying his principle was that “taxation & Representation ought to go together (Farrand, 1966, Vol. I, p. 601).” His proposal in vote 149 read as follows.

That from the first meeting of the Legislature of the United States until a Census shall be taken, all monies to be raised for supplying the public Treasury by direct Taxation shall be assessed on the inhabitants of the several States according to the number of their representatives respectively in the first Branch. (Farrand, 1966)

That vote fails (despite being favored by both Massachusetts and North Carolina), but the slight alteration offered by Elbridge Gerry in vote 150 passes:
That from the first meeting of the Legislature of the United States until a Census shall be taken, all monies for supplying the public Treasury by direct Taxation shall be raised from the several States according to the number of their representatives respectively in the first Branch. (Farrand, 1966, Vol. I, p. 600)

The only difference is that in the second proposal the power of the government is to raise taxes from the states, as opposed to levying taxes on the inhabitants of the states (making the power of taxation take a more indirect route of representation through the states). The difference in the two proposals is minimal—and since North Carolina votes for both of the proposals the difference may be immaterial for our purposes—and so we are left with a question about the general idea. What was important about these votes on the census and taxation to the states favoring proportional representation, and to North Carolina in particular?

On the surface it looks like a minor taxation debate. The only effect of Gerry’s amendment would be to insure that before the census any taxation will occur according to the rule of representation already described. But Madison sees to the heart of that day’s discussions.

Mr M[adison] said that having always conceived that the difference of interest in the U. States lay not between the large & small, but the N. & Southn. States . . ., He liked the present motion, because it tended to moderate the views of both of the opponents & advocates for rating very high, the negroes (Farrand, 1966, Vol. I, p. 603).

This shows the connection to slavery in two ways. First, Madison realizes that the question of taxation under debate is not solely about revenue, but is really one of representation: how will the southern states be represented? What will be the rules of representation that they will live under? Madison is pointing out that not only do taxation and representation go together (as Gerry had already said) but the treatment of slavery and the representation of slave states goes along with it.
Second, Gerry’s proposed rule in vote 150 helps bind future legislatures. Should it pass, it would actually create a status quo from which the future U.S. Congress would have to work. In any legislative procedure the location of the status quo is vital in determining future outcomes—and this talented group of statesmen must have known that fact intimately. Though no one at the convention describes how important this status quo could be, the fact that the vote on Gerry’s amendment is a close one reveals that the proposal was a close call with the southern states voting for it (along with Massachusetts) and the northern and mid-Atlantic states voting against it.

When it did pass, it created a powerful precedent for how the national government would initially treat representation, taxation and therefore implicitly slavery. According to the language of the proposal, taxation would be a matter that included the state level representatives as well as the national representatives and would begin based on the rule of representation then being established—a rule that included the three-fifths clause. There was discussion at the convention of freeing the national legislature to do as it pleases on this question of taxation and representation. Sherman argued that the future legislature ought to be “left at liberty (Farrand, 1966, Vol. I, p. 602).” But the vote goes for Gerry’s proposal and this must have been somewhat reassuring to southern states looking for guarantees about how representation would be treated by the new government. They knew themselves to be initially a minority, but one that were now guaranteed that key questions like taxation would include representation at both the state and national level and that the initial rule would ratify the three-fifths compromise. Perhaps North Carolina in particular was relieved as it waited for the crucial final vote. Vote 154 was the only other substantive vote before Vote 156 and did not change the situation because it did not pass (the vote was merely about whether new states would be treated on an equal footing with the original thirteen states, with respect to representation).

If we compare North Carolina’s probability of voting for the Great Compromise to their position on equal state representation in the Senate previous to the amendment (see vote 110
on July 2), the model estimates that the probability of a positive vote as only 18.4 percent. But after changing the agenda and giving reassurances on slavery in votes 147 and 150, North Carolina’s probability of voting for equal state representation (vote 156) rises to 42.2 percent. Indeed it is clear that the final proposal (vote 150) mattered, as without passage of that proposal North Carolina’s estimated probability of voting for the compromise falls to only 20.8 percent. The probability that North Carolina was more likely to support the compromise after vote 150 passed is 0.99, meaning we can be very sure about the effect. Without direct testimony from William Blount, William Davie, Alexander Martin, Richard Spaight, Sr., and Hugh Williamson we may not be able to know the psychology behind North Carolina’s switch. But if North Carolina gave up something in terms of proportional representation, it did so after the three-fifths compromise was firmly placed into the Great Compromise and only after it was established as the precedent from which the infant government would begin.

**Discussion**

On June 11, when Sherman urges the convention to compromise on representation, he apparently fails. But a month later his proposal carries the day, when Massachusetts and North Carolina seemingly change positions on the question. Perhaps it is fitting that the roll call evidence suggests that both interests—North Carolina’s need to have slavery and the representation of slave states guaranteed—and ideas—Massachusetts’s apparent willingness to shift positions in a more moderate direction—were central to the Great Compromise. Our analysis began by suggesting two possible hypotheses needed testing: moderation effects and agenda effects. It is important to recognize that the roll call record strongly suggests that there were two different types of vote shifts going on, one parochial and one national. North Carolina did not moderate its position on representation—in fact it moved in a more polarized direction, something that is difficult to reconcile with the idea of deliberation and moderation, especially when one considers the evidence that North Carolina gained a
concession on slavery and representation immediately before the decisive vote.

Modern debates over constitutionalism often invoke the intentions of the founders (Rakove, 1996). Setting aside the debate over whether or not current policy questions can be settled by such an appeal, we agree that understanding the origins of the most inscrutable institution in the American government is of vital importance. So worth turning over every rock in order to better understand those events, and the results here suggest that some past perspective on them is incomplete.

In 1913 the greatest historian of the convention—Max Farrand—rejected any explicit connection between the three-fifths compromise and the great compromise by saying that “the three-fifths rule was a mere incident in that part of the great compromise which declared that ‘representation ought to be apportioned according to direct Taxation’ (Farrand, 1913, p. 108).” Historians have largely followed his pattern of treating the compromises as separate events that are “mere incidents” to one another. But the roll call record strongly suggests otherwise. Any explanation of the vote switches must consider the specter of slavery with respect to North Carolina’s vote. Separation into a compromise over slavery and a compromise over representation is unwarranted. The proposal on July 16 was not simply yet another vote about representation. When we carefully model the convention’s agenda that vote is clearly not proportional representation, but was clearly a compromise born out of a desire to attract Southern votes.

Frank Garver described the convention with terms like “conciliation and compromise.” His attitude is reflective of a broader consensus about the convention that describes it in similarly deliberative terms. We would not disagree with the general assessment that deliberation and persuasion were important elements of the convention. But our analysis does not permit the conclusion that the great compromise was simply a moment of conciliation and compromise. Reassurance on the slavery question appears to be crucial in bringing about the switch from North Carolina, and subsequently the American Senate. We would argue that this type of debate is characteristic of all great legislative moments (and probably
many lesser ones as well) and that this general method of scrutinizing the positions of the participants and the unfolding agenda may be applied to any such situation. Is the resulting compromise a result of deliberation leading to a moderation of views or is it bought with a bargain that reveals itself in the agenda?

This finding that the U.S. Senate was purchased, in part, with a bargain related to slavery will, no doubt, make some students of the convention uncomfortable. Conventional wisdom that divides the convention’s compromises by their quality generally separates representation and slavery—hence the name “Great Compromise” for the more preferred bargain. In the light of roll call analysis of the votes, that division strikes us as unwarranted and probably not a descriptively accurate assessment of the convention’s outcome. Most legislative maneuvering involves tradeoffs and bargains that are not always what the bargainers might prefer in the absence of a controversy. It is left to history to judge whether the bargain—in this case a bargain that helped ensure both slavery and the U.S. Senate—was an acceptable compromise or not.
References


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Figure 1 A map of the state delegation positions, fit to a 2-dimensional model. In both panels, the \( x \)-axis represents the positions on the questions of representation. The \( y \)-axis represents the position of the states on the question of centralized government power. The right-hand panel displays a map of the state delegation positions including shifts for three states: Georgia, Massachusetts and North Carolina. “GA2,” “MA2” and “NC2” represent the state’s position for the votes from June 20 through July 16 (GA, MA and NC represent the positions of those delegations for votes previous June 20). Please note that the map reflects only the votes through July 16—the date of the great compromise.
Figure 2 The left panel is a map of the state delegation positions along with the positions of the proposals on June 11 and July 16. 5/30 SQ = the location of the original status quo of the convention, essentially the Articles of Confederation, unamended. Equal = the location of Sherman’s proposal for equal representation in the upper branch on June 11; 6/11 SQ = the location of Sherman’s previously passed proposal for proportional representation in the lower branch; Prop = the location of Wilson and Hamilton’s June 11 proposal for proportional representation in the lower branch GC = the Grand Committee report. Cutting lines, given in the legend denote the estimated cutpoints in the space for each vote. For instance, states to the left of the “Equal” line were estimated to support the equal representation proposal while states to the right are estimated to have opposed it. The right panel is a one dimensional representation of the indicated states and proposals on the proportional representation dimension. Bars indicate 95% highest posterior density intervals.
Figure 3 The top panel displays the progression of the proposals late in July, numbers correspond to the vote descriptions in table 2. NC indicates the estimated ideal point of North Carolina to illustrate that key state’s position. Dark circles indicate proposals that were successful, while open circles indicate proposals that were unsuccessful. The bottom panel of the figure displays the 95% highest posterior density intervals for the estimates and also includes arrows to denote the sequence of votes.
Table 1 Delegation votes on Sherman’s June 11 motion for a Great Compromise on representation—a motion that fails on a six to five vote—and on the July 16 motion to accept the Grand Committee report clause that ratified that compromise—a motion that passes on a five to four vote with Massachusetts “divided.” As noted in the text, the key shifts are Massachusetts (against to divided) and North Carolina (against to for).
<table>
<thead>
<tr>
<th>Vote Description</th>
<th>Probabilities</th>
<th>Actual Vote</th>
</tr>
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<tbody>
<tr>
<td>144: A Proposal for a 10 Year Census</td>
<td>0.71 0.28</td>
<td>Aye</td>
</tr>
<tr>
<td>145: A Proposal to Count All People (instead of the 3/5 rule)</td>
<td>0.56 0.43</td>
<td>No</td>
</tr>
<tr>
<td>147: A Proposal to Agree to the Overall Clause</td>
<td>0.68 0.31</td>
<td>Aye</td>
</tr>
<tr>
<td>149: First Census and Taxation Vote</td>
<td>0.76 0.23</td>
<td>Aye</td>
</tr>
<tr>
<td>150: Revised Taxation and Census Vote</td>
<td>0.74 0.25</td>
<td>Aye</td>
</tr>
<tr>
<td>154: Representation of Original States Vote</td>
<td>0.41 0.57</td>
<td>No</td>
</tr>
<tr>
<td>156: Final Vote on Great Compromise</td>
<td>0.42 0.56</td>
<td>Aye</td>
</tr>
</tbody>
</table>

Table 2 Probabilities of North Carolina’s specific vote outcomes generated by the model and the state’s actual vote cast. Note that because of rounding and the possibility of a divided delegation probabilities may not add to 1. North Carolina’s odd-numbered delegation led to very low probabilities of a divided vote.