WAS HOLDING OUT THE KEY TO WINNING STRIKES?

MASSACHUSETTS, 1881-1894

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ABSTRACT

Recently there have been a number of studies of one aspect of the shape of striking--the relationship of various characteristics to strike frequency. The interpretation of this work is hampered by the absence of complementary work on another aspect of this shape--the relationship between these same characteristics and efficacy. In particular, little is known about how the resource balance between workers and employers affects the odds on the workers' winning. The purpose of this paper is to suggest one way of approaching this question.

Two models of the process underlying the development of strikes are discussed: one based on "resource exhaustion" and one on "bargaining." For each of these models, the relationship between the observed joint distribution of strike duration and outcome and the theoretically more interesting joint distribution of workers' and employers' resources is examined. An argument is made that, at least for the strikes occurring in Massachusetts between 1881 and 1894, the bargaining model is more likely to be fruitful. Finally, the Massachusetts data are fit on the assumption that a bargaining process underlies them. This makes it possible to interpret the fact that workers did better in strikes sponsored by unions as due partly to the fact that workers tended to hold out longer in these strikes and partly to the fact that employers tended to give in sooner.

1. INTRODUCTION

On August 19, 1882 twenty-two spinners employed in a medium sized cotton factory in Fall River, Massachusetts struck for a five per cent wage increase. Although they succeeded in closing the factory, the employer would not consider their demands; and after four days, everyone returned to work under the original terms. On August 28 these spinners left their jobs again. Their demand was as before, and once again they forced their employer to suspend operations. This time, however, the employer capitulated almost immediately. What we make of these incidents depends partly on whether we think the workers could reasonably have expected to win the second time they struck. What we think the odds on workers winning were depends on how we think strikes worked.

The last quarter of the nineteenth century has exceptional importance for understanding the development of industrial relations in this country, because in two senses the current system is rooted in the system of that period. One root is provided by organizational continuity. Skilled workers in many trades had formed unions before. While almost all the unions formed during the sixties collapsed during the ensuing depression, however, many of those formed in the last quarter of the nineteenth century are still operating. The survivors include unions incorporating those which machinists, printers, lasters and cigarmakers founded during this period. The American Federation of Labor was also founded during the eighteen eighties. Workers trying to improve their positions have been heavily influenced by the theories championed by the leaders of existing unions. "High dues" unionism came to predominate in the United States partly because so many later unions

copied successful unions' constitutions and operating practices.

The other root is ideological. Popular thinking regarding industrial relations has been shaped by the explicitly theoretical discussion originated during this period by Hoxie (1966) and Crosby (1910). In particular, the philosophy of "business unionism" evolved by labor activists and social statisticians during the last decades of the nineteenth century has helped to determine the places assigned to the union and the strike. (See on this Perlman, 1958.)

During the nineteenth century holding out was viewed as the key to winning strikes (See, for example, Crosby, 1910; Mitchell, 1903). In traditional scholarship on industrial relations (which emphasizes the emergence of formal rules, the development of overt collective bargaining, and the formation of formal organizations) all incidents before the development of overt collective bargaining are still interpreted as battles decided by what is referred to in this paper as a "resource exhaustion" process. However, it is hard to believe that the two spinners' strikes mentioned above, which predate overt collective bargaining in the Massachusetts textile industry, were settled by resource exhaustion.

The essence of a resource exhaustion strike is as follows: each side comes into the strike with certain resources marshalled in preparation for the combat. During the course of the strike these are consumed. Eventually, one side lacks the resources to continue the stoppage. This side gives in, and the strike ends.

If we view the spinners' strikes discussed here from this perspective, we must conclude that as of August 23, the spinners were unable to continue the stoppage. The cotton manufacturer, on the other hand, had not yet exhausted his resources. The fact that

the spinners stopped work again five days later can be interpreted in two ways: as indicating that they had acquired new resources or as indicating a primary motivation other than the prospect of victory.

Traditionally, two explanations have been offered for the willingness of workers to go out again after the employer has demonstrated that he can defeat them. The first is indeed that factors other than the prospect of winning determine whether a strike is worthwhile. This interpretation, which is capably developed by Shorter and Tilly (1974) for French strikes, has usually been downplayed by students of American strikes and seems of dubious relevance here. The second, which many nineteenth century advocates of high dues unionism pushed, is that workers, especially those without a long tradition of formal organization, are often excessively emotional and incapable of planning ahead. (See, e.g., Janes, 1916.)

The notion that strikes were basically expressive fits poorly with recent thinking on the nature of strikes, discussed in more detail later. It also leaves the second half of the puzzle unsolved. The second time the workers went out, the employer conceded what they asked. This makes assuming either disinterest in the avowed goals or irrationality on the part of the strikers unattractive.

It also seems peculiar that the manufacturer, who gave no sign of having exhausted his resources on the twenty-third, capitulated after a stoppage of a single day on the twenty-eighth. These actions could reflect a sudden change in his fortunes or a very narrow escape the first time, but neither seems likely. The

suggestion that the manufacturer, who employed four hundred people, could not hold out for a week seems thin, to say the least. Profit margins at the time do not seem to have been that narrow, and only three of the two thousand establishments struck in Massachusetts between 1881 and 1894 went out of business during the strikes. In short, an explanation for these incidents consistent with the traditional view that strikes were being settled by resource exhaustion can be concocted, but not one with high face validity.

Fortunately, a more plausible alternative is available. Alongside the main stream of research on industrial relations, a countervailing tradition, inspired by the recognition that strikes, "the most spectacular manifestation of working class action," (Griffin, 1938, 15) can be used to view labor relations, has developed. Recent work in this tradition suggests that, even when overt bargaining is nonexistent, the process underlying industrial and other forms of collective action is fundamentally a bargaining process. (See for instance, Korpi's 1978 discussions of bargaining.)

Minimally, describing a strike as resolved by a bargaining process implies that each party to the strike is concerned with the way in which its behavior is likely to influence the other side. This implies in turn that each side is interested in learning how its opponent evaluates various actions and what its opponent's behavior means. The logic of strikes settled by a "bargaining" process is as follows: at the beginning of a strike, neither side knows how its resources compare with those controlled by the opposition or how much the opposition cares about the outcome. As the strike develops, the images the two sides have of their relative

bargaining strength (which depends on the issues over which the strike is being fought) converge. Eventually, one side becomes convinced that continuing the strike is no longer in its interests. This side concedes, and the strike ends.

Within a bargaining perspective, the fact that the spinners returned to work on the twenty-third, even though the employer had made no concessions, merely indicates that the leaders of the spinners' strike viewed continuing as unprofitable. Perhaps they thought numerous short strikes would worry the employer more than a single long one. In any case, we need not assume that the strikers were incapable of sustaining a longer strike. Scenarios which would explain the differing receptions the employer gave the spinners' demands on the two occasions can likewise be imagined.

It is difficult to reconcile a sudden change in the balance between the employer and his employees with the assumption that strikes are settled by resource exhaustion, because the choice of a resource exhaustion model implies that the key "resources" are stocks rather than flows. It seems reasonable to view a stock, such as money or inventory, as exhausted by the passage of time, but not to assume that fellow feeling or solidarity is exhausted by the process of the strike. In a classic resource exhaustion model, only new alliances can shift the resource balance dramatically in the short run. On the other hand, a bargaining model offers numerous ways to account for sudden changes.

The two models also differ in the weight they put on present versus past circumstances. The emphasis of the resource exhaustion model on stocks is an emphasis on the past. A sudden improvement in the market for cotton can alter the employer's willingness to endure

a long stoppage, but not his capacity to do so. The capacity to hold out depends on the past. On the other hand, in a bargaining model, the propensity to hold out--which plays the role played by the capacity to hold out in a resource exhaustion model--depends on expectations, which, as anyone who has ever followed the stock market knows, can be heavily influenced by short run fluctuations.

When we look for clues distinguishing the two spinners' strikes, we find that the spinners had formed new alliances in the interim period. The first strike was informally organized; the second was ordered by the spinners' union being organized in Fall River at that time. As in most periods, workers striking under union auspices did better than those involved in informally organized strikes. Once again, the explanations consistent with a resource exhaustion model are lacking and those offered by bargaining theory plausible. Contemporary theories ascribed the advantage of sponsorship union-sponsored workers' superior capacity for holding out and attributed the differential to strike benefits. Neither of these factors is germane to the case we are considering, since the second time the strikers had to hold out only one day and received no benefits.

Proponents of a bargaining model argue that strikes work because they reveal the extent of worker dissatisfaction to employers. An employer who thinks that workers are likely to resort to other forms of industrial action, such as sabotage, if striking fails to work, may refrain from breaking strikes, even if he knows that he could. Since the employer involved in these two incidents appears to have been paying less than the going rate of wages for spinners in Fall River, it should have been easy to convince him

that the workers considered their situation untenable. We need merely assume that employers viewed formally organized workers as more formidable opponents to explain the differing receptions given the two stoppages from a bargaining perspective.

In this paper an argument is made that a bargaining model of the process of strike settlement facilitates understanding industrial relations in Massachusetts during the last quarter of the nineteenth century more than a resource exhaustion model does. Assuming a simple form of bargaining enables us to extract information about the joint distribution of employers' and workers' resources which characterized strike situations from the data routinely collected by social statisticians during this period and in a wide variety of other places and times. A change in one side's resources is shown to affect the outcome of a strike both through the direct effect on that side's propensity to hold out and through an indirect effect on the other side's propensity to give in.

The remainder of this paper is organized as follows. The second section is a discussion of how a bargaining model enables us to investigate holding out. In the third section, a simple bargaining model appropriate for the period under consideration is fit to the Massachusetts strikes reported in the Third and Tenth Annual Reports of the United States Bureau of Labor (1887, 1894), and an unusual interpretation of the well-known advantage of union sponsorship is offered: namely that employers' behavior when they were confronting formally organized workers differed substantially from their behavior in other strikes. According to the model developed the change in the employers' behavior played an important role in improving the odds on workers' winning as the parallel

change in the behavior of the workers did.

2. GETTING AT HOLDING OUT

Developing a theory of strike settlement congruent with recent work on strike frequency is one goal of this paper. That work treats strikes as resulting from decisions made by the two main parties to the strike. The model advanced implies that when the odds on a strike's succeeding change, the odds on aggrieved workers initiating a strike also change. It also implies that if the relative efficacy of some form of industrial action increases, workers will shift energy from other forms.

Although arguments like this lie behind both recent and older (e.g., Huebner, 1905-06) work on the shape of striking, empirical investigation of strike settlement is scarce. Earlier students of strikes tended to shy away from this problem, because of its apparent intractability. Griffin (1938) and Peterson (1937) argued that, because the balance of power determines both duration and outcome, duration could function as a proxy for the balance of power and, hence, for the odds on workers' winning. However, discussion of the zero-order relationship between duration and efficacy turned out to be confusing, rather than illuminating. To evaluate the importance of holding out in winning strikes, what we need to know is how the relative and absolute strength of interested parties affected the odds on the workers' winning.

As Weyforth (1917) recognized over fifty years ago, knowing the duration of a strike tells us little about the balance of power behind the strike. It is a sign that the workers are weak when the strikes they lose are short but a sign that the employers are weak,

when the strikes workers win are short. To avoid this problem, Weyforth (1917, 51) focused on the mean duration of successful strikes. He (1917, 48) argued that when special circumstances such as highly perishable demand make it hard for the employer to tolerate long strikes, workers have a chance of winning; but when "the continuance of a strike is more or less a matter of indifference to the employer, the prospects of its success are small." A comparison of the mean duration of successful strikes with the overall level of efficacy in each industry provided what he took to be support for this argument.

Given the level of statistical development in 1917, Weyforth's use of the distribution of strike duration in successful strikes as a proxy for the relative bargaining strength of unions and employers must be admired. However, his technique does not use the information which the duration of ineffective strikes provides. Concentrating on the duration of successful--or of unsuccessful--strikes may give a misleading picture of the underlying resource distributions, especially if the amount of resources workers control is correlated with the amount controlled by the employer.

By making some simple assumptions about the process by which strikes are settled, however, we can deduce the dependence of strike outcome on relative bargaining strength of the two sides from the joint distribution of strike efficacy and duration. The best choice of assumptions depends on the processes by which strikes are resolved. Resource exhaustion models assume strikes last until one side exhausts its resources. If the amount of resources available to each side is equated with the number of days that side can hold out before exhausting its resources, we obtain the following

relation: the duration of the strike is

$D=\min(De,Dw)$, where

De is the number of days the employer's resources will last,
Dw is the number of days the workers' resources will last,
and $\min(De,Dw)$ is the minimum of these two quantities.
The obvious question, when strikes are settled by resource exhaustion, is whether the two sides' resources are correlated. If one is willing to stipulate that employers' and workers' resources are uncorrelated, the underlying resource distributions can be identified from the following fact: the proportion of all strikes settled on day n is

$$C(n) = Re(n)\, rw(n) + Rw(n)\, re(n),$$

where $Re(n)$ [$Rw(n)$] is the probability that the employers' [workers'] resources last more than n days,
and $re(n)$ [$rw(n)$] the probability that the employer's [workers'] resources are sufficient for exactly n days.
When the strike process is viewed as involving bargaining, a model exploiting the idea that strike development reflects a series of decisions is more appropriate.

In the first section, we discussed some factors making the last quarter of the nineteenth century unusually important for tracing the development of industrial relations in this country. An additional inducement to study this period lies in the combination of high quality data and relatively simple labor relations. Most published strike statistics group strikes into three classes: (1) full successes or substantial concessions, (2) partial successes or moderate concessions, (3) failures or no concessions. However, drawing the line between substantial and moderate concessions

introduces considerable uncertainty, and classifying strikes on the basis of whether they resulted in the employer conceding all or only some of the workers' demands has several disadvantages. For one thing, demands may change during the course of a strike. For another, such a scheme requires classifying a strike which starts with the workers demanding a twenty cent raise and ends when they receive a ten cent raise as less effective than an otherwise similar strike in which workers both ask for and receive a ten cent raise.

Dividing strikes into only two groups reduces classificatory ambiguity (Snyder and Kelly, 1976). There was almost no overt collective bargaining in Massachusetts manufacturing before 1886 and little until the middle of the nineties. One indication of how seldom agreements were bargained out is that only one in twelve strikes settled between 1881 and 1886 and less than one in six of those settled between 1886 and 1894 had to be classified as "partial victories." Another is the guarded reception given the State Board of Arbitration and Conciliation founded in 1886. It had only five cases the first year and was forced to dismiss the first of these, because its charter did not provide for arbitration in cases where workers were not currently employed, i.e., during strikes (Massachusetts, 1891). Indeed, the progress of arbitration and conciliation in this country was so slow that in 1905, Leonard Hatch had to draw heavily on European illustrations to prepare a monograph on Industrial Arbitration and Conciliation for the United States Bureau of Labor.

Dichotomizing strikes in this way also has the effect of dividing the strikes in late nineteenth century Massachusetts into two roughly equal portions, which makes the estimates more robust.

More importantly, the procedure captures the flavor of industrial relations. Even now the capitalist has almost total discretion regarding the working situation (Fox, 1974; Korpi, 1978, 45-47). A worker can attempt to ameliorate his lot by trading on the employer's good will. However, the worker's only source of power is the ability to withhold his labor power--either singly, or in concert with his fellow workers. When no collective bargaining had occurred and no formal collective contract existed, the employer's discretion was much greater. Thus, any strike in which the workers exacted concessions represented a real reduction in the employer's autonomy; and, contrariwise, any in which no such concessions were exacted left the employer in control.

The quality of the data published during the last quarter of the nineteenth century means that it is practically--as well as theoretically--possible to classify each strike as having ended either because the workers gave in or because the employers did so. Carroll Wright, who supervised the collection of the data on strikes in Massachusetts which is analyzed in this paper, was at pains to impress upon the user the care which he and his staff had taken to assign each strike either to the category of worker victories of to that of defeats (U.S., 1887, 1894).

Since our interest focuses on late nineteenth century Massachusetts, we use a simple bargaining model which does not allow for compromise in the remainder of this paper. Every day during the strike, the main parties to it decide whether to give in or to hold out one more day. The two sides make these decisions without consultation. However, each bases its decision on what those in charge think the other side is likely to do--that day and later.

Consequently, each side's decision is affected by the extent of its own and of its opponent's resources, the quality of the information it has regarding its opponent's (and its own) resources, and how much difference winning makes to it.

Consistent with this model, instead of attempting to estimate the dependence of strike duration on the resource positions of the two sides directly, a set of continuation parameters for each side is estimated; and the dependence of efficacy and of strike duration on the resource balance are derived from these.[1] According to this model, the probability of a strike ending on day n is

$$C(n)=[Qw(n)+Qe(n)]\,[P(n \mid 1)]$$

where $P(i \mid j)$ is the probability of a strike which lasts j days lasting at least i days,

Qw(n) is the probability that the workers decide to give in on day n and Qe(n) is the probability that the employers decide to give in on day n.

The probability of a strike's continuing for at least n days, P(n), can be rewritten as the product of n-1 terms of the form $P(i \mid i-1)$, where i runs from 1 through n-1, i.e.,

$$P(n)=P(n \mid n-1)\,P(n-1 \mid n-2)\,.\,.\,.\,P(2 \mid 1).$$

Now Sw=Fe, where Sw is the proportion of strikes which workers win and Fe is the proportion of strikes in which employers give in.

So $Sw = Fe=\sum_{n=1}^{\infty} P(n)\,Qe(n)$;

and the mean duration of the strikes workers win is

$$Dw=\sum_{n=1}^{\infty} nP(n)\,Qe(n)).$$

Thus, if we can estimate the dependence of the terms Qe(n) and Qw(n)

[1] The name "continuation parameter" is chosen because of the use of this terminology in formally similar models of educational attainment. See, for example, Fienberg (1977, 87-90).

on the resource positions of the two opponents, we will be able to specify the dependence of efficacy and strike duration on the relative and absolute strengths of the two opponents.

The question of what functional form to select is a difficult one, and the selection which has been made somewhat arbitrary. The model chosen satisfies the following two relations:

3.1 $$Le(n)=Ae(\underline{Re}, \underline{Rw})+ln(n)\;Be(\underline{Re}, \underline{Rw}) =\sum_{k=1}^{j} [a(e,k)+ln(n)\;b(e,k)],$$

3.2 $$Lw(n)=Aw(\underline{Re}, \underline{Rw})+ln(n)\;Bw(\underline{Re}, \underline{Rw}) =\sum_{k=1}^{j} [a(w,k)+ln(n)\;b(w,k)],$$[1]

where Le(n[Lw(n)] is the logit or log odds on the employer [workers] holding out another day as of the n-th day of the strike,

Ae, Aw, Be, and Bw are functions only of the j resources in the set ($\underline{Re}$, $\underline{Rw}$), a(e,k) [a(w,k)] is a constant indicating the impact of the k-th of the j resources in the set ($\underline{Re}$, $\underline{Rw}$) on the initial propensity to hold out

and b(e,k) [b(w,k)] is a constant indicating how the impact of the k-th resource on that propensity alters as the strike progresses.

Two considerations guided the choice of a form. First, a statistically tractable form was required. Second, a form which could be rewritten as a sum or a product of parameters with intuitive interpretations was desirable. Closely related to the second consideration was the desire to select a form which simplified the computation of Sw and of D, since estimates derived from such a form are easier to interpret.

The logic of the simple bargaining model developed in the last

[1] The odds ratio associated with an event, e, that occurs with probability p is o=p/q, where q=1-p. The logit, l, associated with the same event, e, is the log of the odds, i.e., l=ln(o). Models in this paper are based on maximizing the likelihood that the log odds (or logits) associated with the events that the employers (workers) hold out another day are as observed, consistent with the specification in equations 3.1 and 3.2.

section requires that the probabilities for the two sides giving in on day n, Pe(n) and Pw(n), satisfy the following relations:

3.3 $Pe(n)=pe(\underline{Re}, \underline{Rw}, n)$ and

3.5 $Pw(n)=pw(\underline{Re}, \underline{Rw}, n)$,

where, as before, $\underline{Ri}$ represents the set of resources available to party i and pe and pw are nicely behaved functions. The simplest model satisfying these requirements is one in which the continuation probabilities are not affected by how long the strike has lasted, i.e., one in which there are functions $pe(\underline{Re}, \underline{Rw})$ and $pw(\underline{Re}, \underline{Rw})$ such that $Pe(n)=pe(\underline{Re}, \underline{Rw})$ and $Pw(n)=pw(\underline{Re}, \underline{Rw})$, for all n.

However, a "constant continuation" probabilities model fails to capture the tenor of bargaining models in at least two respects. It does not suggest that the weaker party becomes willing to settle, because its estimate of the resource balance becomes more realistic as a result of the information conveyed by the development of the strike; nor does it suggest the way in which the balance of the strike shifts as new resources become prominent. A tight labor market, for instance, probably encourages workers to hold out mostly early in strikes. When alternative employment is available, the threat of being laid off or blacklisted is less plausible; so the employer's ability to frighten workers into returning is small. However, if the employer remains intransigent, workers are also more likely to drift into other employment. On the other hand, having a strike fund large enough to provide benefits probably becomes more important as the strike continues. Assuming constant continuation probabilities makes it impossible to investigate differences in the timing of various resources' impacts on strike development.

Among models with shifting continuation probabilities, the most

tractable are those in which the term measuring timing can be factored out. In other words, those satisfying the following relations:

3.6 $Pe(n)=Me(\underline{Re}, \underline{Rw})\ Ne(\underline{Re}, \underline{Rw}, n)$

3.4 $Pw(n)=Mw(\underline{Re}, \underline{Rw})\ Nw(\underline{Re}, \underline{Rw}, n)$

with Me, Mw, Ne, Nw functions as before, $Ne(\underline{Re},\underline{Rw},1)= Nw(\underline{Re},\underline{Rw},1)=1$. Me and Mw summarize the initial impact of various resources on the two sides' propensities for holding out. Nw and Ne reveal the timing of each resource's impact.

Allowing resources to have a multiplicative impact on the probabilities of giving in would be natural. However, it is hard to obtain a maximum likelihood estimator for that functional form. Two statistically tractable alternative formulations are available: treating the odds ratio as the dependent variable and letting resources have a multiplicative effect and treating the probability of giving in as the dependent variable and letting resources have an additive impact. Since models which are multiplicative in the odds ratio (or equivalently additive in the logits) have greater currency in sociology than probit models, and since a multiplicative form seemed more attractive than an additive form, a logit specification has been used.[1]

Table 1 shows how well each of several models fits the strikes occurring in Massachusetts between January 1881 and June 1894.

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[1] A probability model with a multiplicative form would give results similar to those obtained with the logit specification, because the range of probabilities of holding out is small. The logit model has the further advantage of symmetry with respect to the definition of what constitutes an event, i.e., a model focusing on holding out is equivalent to one focusing on giving in. All models are fit using a standard program for doing maximum likelihood estimations of logit models.

TABLE 1

THE IMPACT OF THE PERIOD A STRIKE HAS LASTED
ON THE PROPENSITY TO GIVE IN
(The logit of giving in is the dependent variable.)

Model	Coefficients			G^2	REDUC. IN G^2	DF REDUC.
	CONSTANT	LN(N)	$(LN(N))^2$			
MODELS FOR EMPLOYERS						
A	-3.7			9695		
B	-3.7	-.52		9162	533	1
	(.1)	(.02)				
C	-2.6	-.1	-.1	9123	39	1
	(.1)	(.1)	(.02)			
MODELS FOR WORKERS						
A	-3.8			8555		
B	-2.7	-.42		8257	298	1
	(.1)	(.02)				
C	-2.7	-.4	.0	8257	0	1
	(.1)	(.1)	(.2)			

Source: U. S. Bur. Of Lab. Ann. Reports 3, 10

Based on 41695 days in 1926 strikes.

Model 1A treats the odds on holding out as invariant. Model 1B allows the odds on giving in to change by a constant per cent every time the period the strike has lasted doubles. Model 1C includes two trend terms: one loglinear and one higher order. Presumably the inclusion of a non-loglinear duration effect taps some of the characteristics typically described as distinguishing "very long" strikes. Substituting Model 1C for model 1B produces a negligible improvement in fit.[1]

The claim that this bargaining model yields readily interpretable impact parameters has been made repeatedly. The only way to validate this claim is to fit a model of the specified form and try to interpret the results. The next section of this paper discusses the results obtained when union sponsorship and the existence of a strike fund are treated as resources.

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[1] Judgements about which models to use were based on the associated G^2 statistics and on whether the changes which result when additional parameters are included are substantial. (See Bishop, Fienberg and Holland, 1976.) The G^2 statistics follow a distribution which is asymptotically a Chi^2 distribution (see Fienberg, 1977) and can, consequently, be tested against a tabled Chi^2 distribution for level of significance. All significance levels reported are based on such comparisons.

3. THE IMPACT OF UNION SPONSORSHIP ON THE PROPENSITY TO HOLD OUT

A key question has always been why union sponsored strikes are more successful. Workers succeeded in extracting concessions in almost half of the sponsored strikes and only about one third of the unsponsored strikes. (See Table 2.) The advantage of union sponsorship was probably obvious enough to make workers think twice before striking without first unionizing. Certainly, such contemporary labor theorists as Mitchell (1903) and Crosby (1910) preached this. Why the odds on success diverged so sharply is less clear.

For our purposes, it suffices to classify explanations of this advantage into three groups. The first group "explains away" the apparent impact of union sponsorship as a reflection of how the situations in which unions sponsor strikes differ from those in which informally organized or "spontaneous" strikes occur. The second focuses on how unions influence workers' behavior. It includes arguments emphasizing the increased capacity of workers to hold out when they receive strike benefits, those emphasizing the tactical advantages which come with organization, and those emphasizing the impact of unionization on consciousness (on how solidary workers feel and how confident they are that their sacrifices to the common good will be matched). The final group attributes the advantage of union sponsorship to a change in the resource balance: both sides are assumed to adjust their behavior on the basis of the balance of power. Since union sponsorship increases the tactical capacity of workers and their ability to hold out, it makes employers more willing to grant concessions and workers less willing to forgo them.

TABLE 2

STRIKE EFFICACY
MASSACHUSETTS, 1881-1894

	UNSPONSORED STRIKES	SPONSORED STRIKES			Total
		NO AID	AID	TOTAL	
SW THE PROPORTION OF WORKER VICTORIES	.36	.40	.51	.46	.43
NUMBER OF ESTABLISHMENTS INVOLVED	557	633	781	1369	1926

Source: U. S. Bur. Of Lab. Ann. Reports 3, 10

The results reported here leave the question of the relative importance of the first and third classes of explanation unsettled. A full account of the mechanisms underlying the improvement in strike efficacy associated with union sponsorship would have to include information on a large number of background variables. In view of the results displayed in Table 3, however, it seems unlikely that background factors account for all of the advantages associated with sponsorship. Union sponsorship affects both the behavior of the workers and that of the employers more than any of the following characteristics: whether the strikers are skilled, whether there are women among the strikers, whether the strike is precipitated by some action of the employers' (a category of strike loosely corresponding to the category usually called "reactive"), and whether the strike involves questions concerning pay.

To the extent that union sponsorship and the distribution of aid tap workers' resources, the models in Table 4 strongly suggest that the resource balance rather than the absolute amount of resources available on each side determines how the strike develops. Both union sponsorship and the payment of strike benefits increased the propensity of workers to hold out significantly. The propensity to hold out increased more rapidly in sponsored than in unsponsored strikes, but the distribution of aid did not significantly affect the rate of change in the propensity to hold out. Interestingly, employers' behavior in cases where strikes were sponsored by unions contrasted with the behavior of employers facing informally organized workers as sharply as the behavior of formally organized workers contrasted with that of informally organized workers.

Models 4Bw and 4Ae (seen earlier as Model 1B) would fit if

TABLE 3

IMPACT OF RESOURCES ON LOG ODDS OF GIVING IN

	Resource	Coeff. (Std. Err.) Const.	Day	Res.	G^2	Df
	The Workers'					
a	None	-3.0 (.1)	-.34 (.02)		8461	1
b	Union Sponsor	-3.4 (.1)	-.29 (.02)	-2.1 (.1)	8281	2
c	Aid	-3.7 (.1)	-.23 (.03)	1.6 (.1)	8235	2
d	Skilled Involved	-1.6 (.5)	-.34 (.02)	-1.9 (.8)	8457	2
e	Strikers Male	-.29 (.1)	-.34 (.02)	-.1 (.1)	8460	2
f	Wage Strike	-.29 (.1)	-.34 (.02)	.1 (.1)	8460	2
g	Estab. Closed	-.28 (.1)	-.35 (.02)	-.6 (.1)	8421	2
h	Precip. by Emp.	-3.0 (.1)	-.35 (.02)	-2.3 (.1)	8456	2
	The Employers'					
a	None	-2.6 (.1)	-.44 (.02)		9433	1
b	Union Sponsor	-2.7 (.1)	-.07 (.02)	-.4 (.1)	9421	2
c	Aid	-3.2 (.1)	-.34 (.02)	-1.4 (.1)	9235	2
h	Precip. by Emp.	-2.6 (.1)	-.44 (.02)	.0 (.1)	9433	2

Source: U. S. Bur. of Lab. Ann. Reports 3,10
Based on 44383 days in 1926 strikes.

TABLE 4

MODELS FOR THE LOG ODDS ON GIVING IN MASSACHUSETTS, 1881-1894

Model	Coefficients						G^2	DF
	CONSTANT	LN(N)	U*	ULN(N)	A**	ALN(N)		
MODELS FOR EMPLOYERS								
Xe	-3.7						9695	0
Ae	-2.3	-.52					9162	1
	(.1)	(.02)						
Be	-2.3	-.52	.6				9162	2
	(.1)	(.02)	(.2)					
Ce	-1.9	-.63	-.4	.1			9156	3
	(.1)	(.03)	(.2)	(.1)				
De	-.6	-.63	-1.3	.3	-1.1		9081	4
	(.1)	(.03)	(.2)	(.1)	(.1)			
Ee	-.9	-.57	-1.1	.1	-.9	.2	9080	5
	(.2)	(.05)	(.3)	(.1)	(.1)	(.1)		
MODELS FOR WORKERS								
Xw	-3.8						8855	0
Aw	-2.7	-.42					8257	1
	(.1)	(.02)						
Bw	-1.8	-.35	1.2				8135	2
	(.1)	(.02)	(.1)					
Cw	-1.2	-.30	-1.5		.6		8114	3
	(.1)	(.03)	(.1)		(.1)			
Dw	-.8	-.39	-2.0	.2	-.7		8107	4
	(.1)	(.03)	(.2)	(.05)	(.1)			
Ew	-.5	-.45	-2.2	.2	-1.0	.1	8107	5
	(.2)	(.05)	(.3)	(.1)	(.3)	(.1)		

* U is a dummy variable for union sponsorship.
** A is a dummy variable for aid.
Source: U. S. Bur. of Lab. Annual Reports 3,10
Coefficients based on 41695 days in 1926 strikes.

union sponsorship were unimportant. Each of the models 4A through 4E includes the effects allowed in the previous model plus one additional effect. The effects were introduced in an order determined by how much allowing for each additional effect increased the explained variance estimate, G^2. The first modification in each case, i.e., that shown in models 4Bw and 4Be, involved allowing union sponsorship to affect the overall odds on giving in without allowing the impact of sponsorship to vary over the course of the strike. For workers, the next model fitted, 4Cw, is like model 4Bw, except for allowing both union sponsorship and the distribution of strike benefits to affect the workers' propensity to hold out. For employers, the next model fitted, 4Ce, is one allowing the impact of union sponsorship to vary with the period the strike has lasted. To give in which reflects how long the strike has lasted. In each case, the fourth model, 4D, allows both the overall level and the trend terms to differ according to whether strikes are sponsored; and the final model, 4E, is one allowing aid, as well as sponsorship, to affect both the the initial propensity to give in and the rate at which that propensity changes.

The same criteria which led us to prefer model 1B to models 1A and 1C in the discussion of what functional form to use, point to model 4Dw as the best model of the impact of union sponsorship and aid on workers' propensity to hold out. In other words, union sponsored strikes differ significantly from informally organized strikes in the overall level of the odds on workers giving in each day and in the rate at which this level alters as the strike continues, and strikes in which strike benefits are distributed differ in the odds on workers giving in but not in the rate at which

these odds alter. Similarly, model 4De, which parallels model 4Dw, is the best model for the propensity of employers' to hold out.

The way in which the differences in the propensity to hold out documented in Table 4 affect efficacy becomes clearer, when we examine Table 5. This table shows the coefficients Ae, Aw, Be, and Bw which characterize each of three classes of strikes: those in which no union sponsorship is involved, those in which a union acts as a sponsor but without distributing strike benefits and those in which strike benefits are paid.[1] the implied odds on workers' winning in each class of strikes are displayed in the column headed Sw. The implied mean durations for all strikes, successful strikes, and unsuccessful strikes are exhibited in the columns headed D, Dw, and De. To make it easier to interpret the results obtained, the observed values of Sw and D are also shown for the total population of strikes and for each of the three subclasses of strikes considered. The estimates of Sw and D are close to the observed values for two of the three subclasses of strikes considered: that including informally organized strikes and and that including strikes in which the sponsoring unions distributed strike pay. The efficacy predicted for each class of strikes is slightly too high and the mean duration slightly too low. These discrepancies result because a very large proportion of strikes were settled after only a few days, and workers were most successful in these rapidly settled strikes. Consequently, a single loglinear

[1] Table 5 is based on a simplified version of the models in Table 4: each resource is allowed to affect the behavior of each side in one way, rather than two. This simplification was made, because allowing additional effect parameters made the results harder to interpret, without appreciably changing the predictions for efficacy or duration.

TABLE 5

MODELS SHOWING THE INTERACTION OF THE TWO SIDES' PROPENSITIES TO HOLD OUT

Model	Coeff.-logit (emp'er give)		Coeff.-logit (worker give)		Sw*	Mean duration strikes			Strikes considered	
	Ae	Be	Aw	Bw		all-D	emp'er won-De	workers won-Dw	for workers	for emp'ers
MODELS FIT TO STRIKES WHICH OCCURRED IN MASSACHUSETTS, 1881-1894										
A	-2.58	-.44	-2.96	-.34	.46	22.6	21.0	24.6	all	all
Bu	-2.13	-.55	-1.83	-.30	.36	5.8	7.6	6.9	unspon.	unspon
Bs	-2.38	-.30	-2.71	-.30	.58	11.8	11.7	11.7	spon.,no aid	spon.,no aid
Ba	-2.38	-.55	-3.35	-.30	.55	34.2	44.4	39.3	spon.,aid	spon.,aid
VALUES OBSERVED IN MASSACHUSETTS										
A'					.43	22.7	22.5	23.0	all	all
Bu'		—			.36	9.8	11.5	8.8	unspon.	unspon.
Bs'					.40	12.8	12.8	12.7	spon.,no aid	spon.,noaid
Ba'		—			.51	38.8	43.5	34.3	spon.,aid	spon.,aid
SIMULATIONS (employers' and workers' behavior from different situations)										
C	-2.13	-.55	-2.71	-.30	.53	11.8	16.5	14.0	spon.,no aid	unspon.
D	-2.38	-.30	-1.83	-.30	.38	6.6	6.6	6.6	unspon.	spon.,no aid

*Sw is the proportion of strikes which workers win.
Source: U. S. Bur. Of Lab. Ann. Reports 3, 10
Coefficients based on 41695 days in 1926 strikes.
Models allow aid and sponsorship to affect propensities to give in and the rate at which these change.

trend term underestimates the rate at which the propensities to give in are decreasing during the first few days of the strike and leads to an overestimate of the proportion of strikes settled during the period when settlement is most likely to be in the workers' favor.

The fit of the model to the class of strikes in which union sponsorship was not accompanied by the distribution of benefits is not so good. The most likely explanation for the gross exaggeration of the level of efficacy predicted for this class of strikes is that it reflects the class' fundamental inhomogeneity. Some of the strikes falling into this class were probably conducted by recently organized or weak unions and developed along the path followed by unsponsored strikes. Others were conducted by strong unions which had the capacity to dispense benefits and would have done so if the strike had lasted longer. In fact, if the bargaining model is correct, it is not so much the payment of benefits as the capacity to pay them which makes strikes effective. Accordingly, an attractive interpretation for the difficulties we experience in modelling the behavior of the two parties to sponsored strikes in which no aid is distributed is as follows:
When the workers are well organized, as signalled partly by their possession of a strike fund, employers are likely to give in early and workers very unlikely to do so. Consequently, the strikes in which aid is actually distributed represent only the tip of the iceberg. In fact, strikes in which aid is actually distributed may represent situations in which the employer has other resources balancing the advantages the workers gain by organization. The tendency to overestimate the proportion of strikes settled during the early period when strike settlement favors the workers and

underestimate the change in the relative odds on workers' winning as strikes continue is exacerbated by the fact that the workers occupy a relatively good bargaining position in many of the shorter sponsored strikes where benefits are not paid but not in the longer strikes in the same category.

Although the models clearly need to be refined, the situation modelled suggests what happens when one side (here the workers) acquires new resources (represented by union sponsorship and sufficient funds to pay strike benefits). Both sides behave differently. Without introducing further control variables, we cannot eliminate the hypothesis that the apparent effect of union sponsorship on the employers' propensity to hold out reflects differences in the backgrounds against which the different classes of strike develop. Since the effects of union sponsorship and aid on the employers' behavior are so much stronger than those associated with the other background variables considered (in Table 3), however, it seems likely that improvements in the workers' resource position affect the way the employer responds to the workers' actions.

The employer's and the workers' propensities to hold out interact nonlinearly to determine what proportion of strikes succeed and how long strikes last. This makes it hard to allocate the impact of sponsorship on strike efficacy between changes in the employers' behavior and changes in the workers' behavior. However, if the two sides' tendencies to give in change in the same way throughout the strike, so that the two series of continuation probabilities can be factored as $Pe\ g(n)$ and $Pw\ g(n)$ for some function g of n, the probability that the workers win is independent

of duration. This means that the probability that the workers win is given by

$$Sw=Fe=qe/(qw+qe).$$

Thus, the probability of workers' winning sponsored strikes without aid can be computed as

$$Sw=(.06)/(.06+.08)=.58.$$

Unfortunately, the simple models used here do not provide a good picture of the settlement process characterizing sponsored strikes in which aid was not distributed. In the case of the other strikes, where the models do fit reasonably well, the propensities of the two sides to give in change at different rates.

One way to investigate the way in which the two sides' behavior interacted to produce the differences observed involves determining what the joint distribution of duration and efficacy would have been, if the behavior of the employers in one class of strikes had occurred in conjunction with that the workers exhibited in a different class of strikes. Models 5C and 5D illustrate the results of such a procedure. The efficacy and the mean durations implied by two hypothetical conjunctions are displayed. For example, Model 5C shows what would have happened if the odds on the workers' holding out had been those characterizing unsponsored strikes and the odds on employers' holding out those characterizing for sponsored strikes in which no aid was given. To the extent that the models capture the process by which strikes were being settled, they suggest that changes in workers ability to hold out were more important than changes in the extent to which they actually held out. If our conjecture about the composite nature of the class of strikes in which sponsoring unions distributed no aid is correct, when the

models are refined by the addition of control variables, this aspect of the situation will become more obvious. Most of the computed difference in the efficacy of sponsored and unsponsored strikes reflects changes in the propensity of workers to hold out. However, about ten per cent of of the differential reflects changes in employers' willingness to give in. When we examine the coefficients characterizing the behavior of each side in the several situations, the explanation which emerges is as follows: Employers' initial propensities to hold out were not affected by how organized workers were, but as strikes lengthened, employers' resistance to giving in hardened much more rapidly when they faced informally organized workers. In contrast, the propensity of workers to give in was significantly higher early in unsponsored strikes than it was early in sponsored strikes, but as the strikes lengthened, the propensities of workers to hold out in these two classes of strikes converged.

The image which emerges contrasts with the traditional image of strikes during the period before overt collective bargaining as battles in which the side which could gut it out longer emerged victorious. Recent work on preindustrial conflict has led several scholars to suggest that in many superficially disorganized situations, what we see are the traces of collective bargaining by riot. Similarly, the results in this paper suggest that bargaining provided the central dynamic of many strikes long before employers were willing to recognize the existence of workers' collective rights.

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