

Positive feedback in collective mobilization: The American strike wave of 1886

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Abstract. Waves of collective mobilization, when participation increases rapidly and expectations shift dramatically, pose an important puzzle for social science. Such waves, I argue, can only be explained by an endogenous process of “positive feedback.” This article identifies two distinct mechanisms – interdependence and inspiration – that generate positive feedback in collective mobilization. It also provides a detailed analysis of one episode: the wave of strikes that swept American cities in May 1886. Although historians and sociologists have suggested various precipitants, these do not account for the magnitude of the upsurge. Focusing on events in Chicago during the months before May, the article provides quantitative and qualitative evidence for positive feedback.

In the first months of 1886, hundreds of thousands of American workers joined trade unions and, above all, the Order of the Knights of Labor. The Order appealed to workers who were not represented by established craft unions, and to trade unionists who believed in working-class solidarity. Figure 1 shows the influx of members that made it – briefly – the largest labor organization in the world.¹ Membership growth was accompanied by mass strikes. May 1, 1886 had been arranged as the date when workers would enforce the eight-hour day. Over 200,000 workers struck for shorter hours, and many more gained concessions without conflict. Altogether, the strike wave of 1886 was not surpassed until the First World War. The upheaval was spectacular because of the sheer number of workers acting collectively to defy their employers. It was also spectacular because it was so sudden. “In ten months a revolution has been accomplished in American society,” proclaimed Friedrich Engels.²

What happened in 1886 was remarkable, but not unique. As Eric Hobsbawm observes, labor movements everywhere have progressed by sudden “explosions” or “leaps.” A membership graph “looks like a series of sloping steps, or of broad valleys broken by sharp peaks, or a

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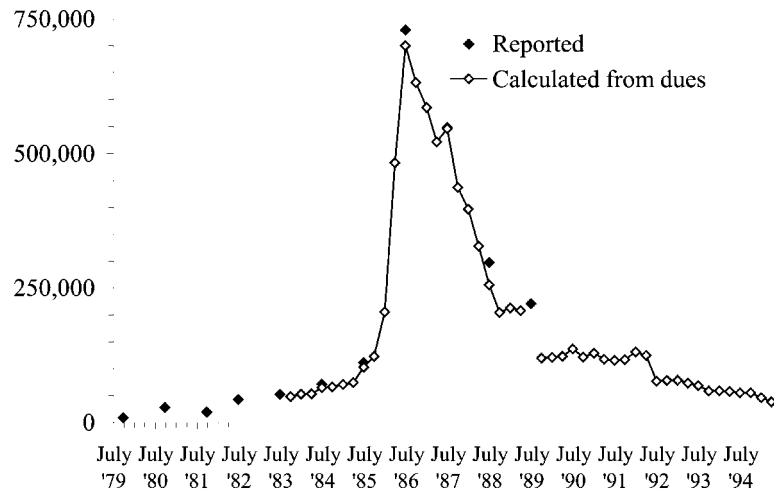


Figure 1. Membership of the knights of labor, 1879–1895.

combination of both; very rarely is it a mere rising slope.”³ There was a close parallel in the strike wave and membership influx in Britain, associated with New Unionism, in 1889–1890. Similar episodes are found much farther afield. In 1775, grain riots spread from town to town across the Isle de France within a few weeks.⁴ In 1830, revolt spread among the rural counties of southern England, as laborers destroyed threshing machines, set fire to barns, and demanded higher wages.⁵ In 1989, the number of protesters in East Germany grew from hundreds to millions within a matter of months.⁶

These are all instances of “transgressive contention,” involving newly identified actors or innovative collective action.⁷ This often occurs in waves. A wave is initially characterized by a very rapid increase of participation – change on a scale of weeks or months, rather than years or decades. This is accompanied by dramatic changes in expectations. People are taken by surprise. Optimism escalates with participation: what was unthinkable now seems inevitable. Such waves, I argue, can only be explained by an endogenous process of positive feedback. After a period of neglect in the literature on social movements, this kind of explanation is gaining renewed attention. Thus Doug McAdam, Sidney Tarrow, and Charles Tilly urge scholars to “shift studies of strike waves away from identifying general conditions under which they occur to an explanation of their dynamics.”⁸ The notion of positive feedback is not new; it has been recognized under

various guises in different literatures. Synthesizing these diverse strands, this article identifies two distinct mechanisms – interdependence and inspiration – which generate positive feedback in collective mobilization.

The strike wave of 1886 provides a dramatic example of rapid change. It is especially puzzling, moreover, because it failed. After initial concessions, employers launched a counterattack, crushing organization within the workplace. By the end of the year, the Knights of Labor was discredited by defeat and riven with factionalism. A wave that succeeds in enacting change – like the toppling of communist regimes in 1989 – is readily explained, at least superficially, as follows. Structural changes raised the objective opportunities for success; people acted accordingly, and were successful. This causal story motivates the emphasis on “political opportunities” in recent literature. Failure, however, reveals the gap between subjective expectations and objective circumstances. It highlights a crucial question: why did so many people come to believe that they could transform social structure by means of collective action?

Labor historians and historical sociologists provide several invaluable studies of the labor movement in the 1880s.⁹ These are motivated primarily by the question of American Exceptionalism: why there was no equivalent to the labor and socialist parties across the Atlantic.¹⁰ The literature nonetheless suggests three potential explanations for the upsurge of 1886. One is the long-term “change process” of industrialization and deskilling.¹¹ It is not clear how this general trend – a concomitant of capitalism – could explain the rapid mobilization of workers within the space of months. Another explanation is the interpretive frame articulated by the Knights of Labor, what historians call “labor republicanism.” This supplied American workers with an indigenous – non-Marxist – critique of capitalism, appealing to republican values. Once again, however, this does not really explain the timing of the upsurge; such ideas had been familiar since the end of the Civil War.¹² Moreover, it is not clear that the mobilization of workers entailed ideological conversion. A third explanation could account for the timing of the upsurge: the Knights of Labor’s victory against a railroad magnate in the fall of 1885. Unfortunately, however, this victory evaporates on closer scrutiny (as we see below). Why so many people shifted so rapidly from quiescence to militancy therefore remains a puzzle, in this case as in so many others.

One characteristic of the strike wave of 1886 makes it particularly analytically tractable. In cities where the eight-hour campaign was salient, newly organized workers generally delayed striking until May 1. Mobilization and protest are usually intertwined; here unionization and strikes were relatively distinct phases. Therefore “horizontal” interactions among different groups of workers can be analyzed while bracketing the “vertical” interaction between workers and their opponents.¹³ Chicago is selected for intensive investigation because it was the epicenter of the strike wave, and because the Illinois Bureau of Labor Statistics collected exceptionally detailed statistics on labor organizations.

The article begins by tracing various manifestations of positive feedback in the literature. The circularity of positive feedback is unraveled in the second section, which explicates mechanisms of interdependence and inspiration. The third section examines various precipitants of the upsurge of 1886, proposed by historians and social scientists. None of these can account for the magnitude of the strike wave. The fourth, and longest, section focuses on the mobilization of workers in Chicago during the winter and spring of 1886, and provides quantitative and qualitative evidence for positive feedback. The implications of this kind of explanation are discussed in the conclusion.

Positive feedback

Positive feedback is an abstraction, and it may seem an obscure one. Its generality, however, helps us to recognize similar dynamic processes in diverse substantive contexts. A process of *positive feedback* “feeds on itself to the point where there is a continual increase or decrease of some variable, and there is no true point of equilibrium.”¹⁴ Although this change may be triggered by an exogenous cause, the magnitude of the ultimate effect depends on this process of amplification – this is *nonlinearity*. (Both terms derive from electronics and date from the 1920s.) In the context of transgressive contention, two variables are readily measured. One is the number of protest actions occurring within a time interval. Another is the number of people at a point in time belonging to organizations that sustain contention. Positive feedback occurs when an increase at time t leads to an increase at time $t + 1$, and so on. In other words, protest incites further protest; an influx of new members encourages others to join. Two points should be underlined. First, almost by definition, the process cannot continue indefinitely.

Positive feedback is not an equilibrium. (I elaborate this point further below.) Second, positive feedback is symmetrical: it can refer equally to increase and decrease.

Although the terminology is foreign, the basic insight accords with the intuition of observers. In descriptions of this upsurge and others like it, the same metaphors recur: avalanches, epidemics, and fires. For Engels, the movement of 1886 “spread with the rapidity of a prairie fire.”¹⁵ “The fever of joining” – recalled one Knight – “seemed to be epidemic.”¹⁶ Hobsbawm discerns a “snowball effect” in the parallel British labor upsurge of 1889–1890.¹⁷ According to Michelle Perrot, strikes “spread like an epidemic” in France in May 1880 and May 1890.¹⁸ Barrington Moore equates a coalminers’ strike with “a spark which ignited a ‘prairie fire’ in the Ruhr” in 1889.¹⁹ The examples could be multiplied. The metaphors used by social historians and historical sociologists convey the intuition of positive feedback. One historian, J. H. Hexter, has gone further, to elaborate an analogy for the process of rapid, endogenous change. He compares an event like the French Revolution to the destruction of the Tacoma Narrows Bridge.²⁰ As the exogenous wind speed reached a certain point, wind vortices (an unintended consequence of stiffening girders) generated torsional oscillation. This oscillation increased through a process of positive feedback, until the bridge literally shook itself to pieces. Although Hexter intended to justify traditional narrative, he was remarkably prescient in anticipating the flood of similar analogies recently excited by mathematical investigations of dynamic chaos.

In social science, the idea of positive feedback has appeared in various guises in different literatures. Most remarkably, it has been associated with individual rationality *and* irrationality. One strand of its intellectual history is the literature on collective behavior, which reigned in American sociology until the 1960s. Positive feedback in collective behavior was described by Herbert Blumer as “circular reaction.”²¹ This endogenous process was inextricably connected with irrationality. Blumer defined “social contagion” as “the relatively rapid, unwitting, and nonrational dissemination of a mood, impulse, or form of conduct.” People behaved collectively like a herd of cattle when alarmed. The association with irrationality – and indeed, pathology – can be traced further back to the writers on crowds at the end of the nineteenth century.²² Even Max Weber relegated contagion and imitation to the margins of “social action.”²³

Ironically, just as collective behavior was being discarded by sociologists of social movements, positive feedback was discovered by social scientists committed to formal models of collective action. This entirely separate intellectual lineage was established by Thomas Schelling, who demonstrated how individual choices could generate neighborhood segregation through a “tipping” process.²⁴ Mark Granovetter formulated a similar threshold model of participation, and these ideas have been applied to revolutions and social movements.²⁵ This intellectual lineage has had a greater impact in political science and economics than in sociology. For most sociologists, models of positive feedback are tainted by association with rational choice. Moreover, formal modeling has naturally tended to emphasize mathematical complexity, which can obscure its relevance for explaining actual events.²⁶

In recent literature on social movements and contentious politics, positive feedback appears most commonly in explanations for waves on the very largest scale. Tarrow calls these “cycles of contention.”²⁷ They are identified, it seems, when transgressive contention spills over national boundaries. These large-scale waves involve a diverse – and often antagonistic – range of participants and aims.²⁸ The wave of the late 1960s is one familiar example. In such large-scale waves, Tarrow and McAdam recognize positive feedback. “[T]he demonstration effect of collective action on the part of a group of early risers triggers a variety of processes of diffusion, extension, imitation, and reactions among groups that are normally more quiescent.”²⁹ In McAdam’s summary, “most social movements are caused by other social movements.”³⁰ Within a movement, presumably, mobilization and protest could be explained in the same way: when some people mobilize, others join in; when some people protest, others emulate it. In their recent theoretical manifesto, McAdam, Tarrow, and Tilly provide a tantalizing glimpse of several mechanisms that can generate positive feedback, including “opportunity/threat spirals” (discussed in the next section). Two valuable studies of rapid mobilization emphasize the importance of what I call positive feedback, though different terminology hinders the recognition of the underlying theoretical similarity. Anthony Oberschall uses a variant of the threshold model to explain the spread of sit-ins in the American South in 1960.³¹ Charles Kurzman proposes an endogenous explanation for the rise of protest against the Shah of Iran in 1979.³²

Another hindrance to the recognition of positive feedback is the dominant quantitative methodology of identifying independent variables

and estimating the magnitude of their effect on the dependent variable.³³ This method has profoundly influenced ideas of causation and explanation, even for social scientists that eschew statistical techniques. Event-history analysis, however, makes it possible to analyze the dynamics of change. There is now a burgeoning literature on the diffusion of organization and protest. In a pioneering series of analyses, Carol Conell and Kim Voss investigate the founding of Local Assemblies of the Knights of Labor in the 1880s, concentrating on Assemblies that included less-skilled workers.³⁴ In New Jersey, for example, the probability that less-skilled workers would found an Assembly in the course of a year tripled when a Local Assembly for skilled workers existed in the same community.³⁵ In similar fashion, Peter Hedström and others demonstrate how the Social Democratic Party spread across Sweden over many decades.³⁶ These studies of organization are conducted over annual intervals; event-history analyses of protest, by contrast, can be conducted on a daily basis. Conell and Samuel Cohn examine strikes by coal miners in France between 1890 and 1935, estimating the effect of a strike on the probability of another strike occurring in the same *département*.³⁷ They exclude strikes occurring on the same day or on consecutive days, and so synchronized general strikes are not counted. Nevertheless, the effect is strongly positive, even controlling for the usual economic variables. Before the First World War, the probability of a strike was highest in the days after another strike had begun; afterwards, the probability was highest in the days after another had ended. In similar fashion, Daniel Myers shows how urban riots spread across the United States in the 1960s.³⁸

Thanks to event-history techniques, an endogenous process of positive feedback is now usually conceived apprehended as “diffusion”: “the process by which an innovation is communicated through certain channels over time among the members of a social system.”³⁹ Nevertheless, the concept of positive feedback offers several advantages for understanding collective mobilization (as well as other social processes⁴⁰). As noted, it can be applied to decline as well as rise. Positive feedback is also more suitable for capturing the transformation of expectations, which is a crucial dimension besides the increase or decrease of participation. Finally, the concept is linked with nonlinearity – or, in a different idiom, contingency. This implies that small changes can have large, and indeed unexpected, effects, whereas diffusion connotes an inevitable progression.⁴¹ In summary, the notion of positive feedback allows us to recognize the same basic insight in diverse intellectual

lineages. The fact that it has reappeared so often, in one guise or another, suggests that it captures something important.

Mechanisms of inspiration and interdependence

Positive feedback is a general characterization of process. Explanation requires us to specify particular mechanisms that generate this process.⁴² In transgressive contention, we can identify two core mechanisms: interdependence and inspiration. These are necessary to explain the mobilization of American workers in 1886, and they are equally relevant in other waves of contention. In elaborating these mechanisms, my aim is to show why people would have reason to participate in collective action because others have recently participated. The emphasis is on the logic of individual decision-making. After all, causal explanation requires understanding the reasons for action, as Weber famously observed. More specifically, sociologists still tend to associate positive feedback with the irrationality of collective behavior, and therefore it is important to emphasize how positive feedback can be generated by rational decisions. “By assuming that actors act *intentionally*,” as Hedström suggests, “we are forced to probe more deeply into the reasons or mechanisms that explain why actors follow the lead of others.”⁴³

Consider a situation in which individuals face a powerful adversary, who they can challenge only by acting collectively. The example here is workers’ mobilization and protest, organizing with other workers and striking against employers. The analysis applies to other social relationships and other kinds of collective protest. Two mechanisms can generate positive feedback: interdependence, which inheres in collective action, and inspiration, which follows from uncertainty. These are summarized in Table 1.

The rationale for interdependence is familiar. For the great majority, a decision to participate in protest is *contingent* on the actions of others.⁴⁴ At the very least, one worker alone cannot “strike”; he or she is just fired. The motivation to participate increases with the number of participants, for three reasons. First, the expected collective benefits increase. The more workers who strike, the more they can hope to win concessions. Second, the expected individual and collective costs decrease. The more workers who strike, the less they need to fear being replaced or singled out for victimization. This observation is common-

Table 1. Reasons for positive feedback

Interdependence (inherent in collective action)

The larger the number of us participating in collective action, the more compelling it is for me to participate:

- we have greater hope for success;
- I have less fear of retaliation by our adversary;
- I have more moral obligation to join those who do participate, and they will be more likely to retaliate against me if I do not.

Inspiration (follows from uncertainty)

If we know that others have acted collectively:

- that provides an occasion to consider the possibility of collective action for ourselves;
 - even if the outcome of their action remains uncertain, the fact that they expect success raises our own hopes;
 - if they have succeeded, that raises our hopes still further – *but* if they have failed, that lowers our hopes.
-

place: “one department is already on strike . . . so that makes everybody more courageous,” as a shipyard worker in Gdansk recalled of 1980.⁴⁵ Neither reason would dissuade truly selfish individuals from attempting to free ride, of course.⁴⁶ A third reason is crucial. As the number of participants increases, the moral obligation to participate increases; concomitantly, participants become more likely to punish those who violate this obligation.⁴⁷ The more workers who strike, the more a potential “scab” needs to fear ostracism and even violence. Once again, this observation is commonplace. In an iron foundry in New Jersey, for example, a recalcitrant worker was simply told that “you’ve got to stand with us on this . . . everyone walks together . . .”⁴⁸ That sufficed to persuade him to abandon work.

As the motivation to participate increases with the number of participants, the situation can be modeled as an n-person assurance game.⁴⁹ There are two stable equilibria: either no one participates or everyone does. This gives us an inkling of the volatility inherent in collective protest. Somewhere between these two equilibria lies the threshold where the individual “payoff” for participation exceeds that for non-participation. The assurance game is static; it does not model the transition from one equilibrium to another. For dynamics, we can turn to the threshold models, proposed by Granovetter.⁵⁰ As before, the threshold is the minimum number of participants required for the individual to decide to join them. The novel element is heterogeneity: individual thresholds vary. A threshold of zero indicates unconditional

participation. The higher the threshold, the greater the reluctance to participate. For a given distribution of thresholds, the participation rate can be calculated. Starting at zero, participation propagates, from individuals with lower thresholds to those with higher ones – until it reaches equilibrium. Most importantly, a slight change in the distribution of thresholds can dramatically change the equilibrium participation rate. The threshold model is simple, even crude. Yet it highlights key features of an endogenous process. Participation is a process of positive feedback: individuals participate because others have participated. There is no linear relationship between the distribution of thresholds and the equilibrium participation rate; a small change may have a large effect. As Schelling observes, such models “warn against jumping to conclusions about individual intentions from observations of aggregates.”⁵¹

Interdependence applies to collective action, where everyone either succeeds or fails – or, at least, success for some will make success for others more likely. This instrumentality also creates a moral obligation: participants will punish members of the collectivity who try to free ride. Interdependence explains why participation can propagate *within* a collectivity or group. The second mechanism of positive feedback operates *between* such groups. This is less familiar, as theories of collective action have focused on a single group pursuing an indivisible collective goal. Even in the absence of interdependence, collective action by one group can nonetheless inspire another group to act.

Because defiant collective action is rare and risky, the actions of others are potentially influential for three reasons. First, people are not continually deciding whether to take part in transgressive contention. Learning that others elsewhere have acted raises the possibility, thus providing “an occasion for deciding.”⁵² Hearing that other workers have struck, workers are more likely to consider whether to strike. Learning of a tactical innovation – like the sit-down strike – likewise provides an opportunity to adopt it.⁵³ Second, the actions of others can influence a group’s expectations of their own success. Before the outcome is clear, the simple fact that others have acted implies that they expect success. That provides a second-order reason to hope – based on “expected” facts rather than “accomplished” facts.⁵⁴ Knowing that other workers hope to win a strike, workers may raise their own expectations of victory. Once the outcome of others’ actions becomes clear, that provides rather more information. The success of others provides further reason to hope for success – a third source

of inspiration. Knowing that other workers have struck and won, workers can raise their own expectations of victory. Conversely, of course, failure should lower expectations.⁵⁵

Inspiration is captured by models of informational cascades.⁵⁶ Although referring to individual rather than collective action, they show why the actions of others can be so influential. Each individual observes a private “signal” that indicates, to some degree of probability, whether it is worth taking a certain action. Under these circumstances, it is rational to use the observed actions of others in order to infer their signals. Ironically, their actions convey little information – because they too are following others. “[T]he very act of trying to use the information contained in the decisions made by others makes each person’s decision less responsive to her own information and hence less informative to others.”⁵⁷ With heterogeneity, inspiration (like interdependence) could be conceived in terms of thresholds, here referring to groups rather than individuals. Members of a group with little hope for success have a high threshold: only when they see many others acting collectively will they believe that they also have something to gain from doing the same. The lessons of the threshold model also apply to inspiration.

Interdependence and inspiration provide reasons for people to act because others have done so. These twin mechanisms can be differentiated as ideal types; in reality, they are often intertwined. Moreover, both mechanisms depend on culturally constructed – and contested – answers to the questions, “who are we?” and “are they like us?” As an example, a small group of craftsmen in a large plant might demand a wage raise for themselves alone, or they might join with other employees in the plant or with their fellow craftsmen in the city. The scope of interdependence is different in each case. Similarly, while inspiration requires information about the actions of others, it is also a matter of interpretation: the relevance depends on the “attribution of similarity.”⁵⁸ Identifying these mechanisms in a particular episode therefore involves tracing – and indeed explaining – the bounds of interdependence and inspiration.

These mechanisms are important, I argue, for explaining waves of transgressive contention. This does not imply that they are the only mechanisms capable of generating positive feedback. McAdam, Tarrow, and Tilly emphasize “opportunity/threat spirals,” which arise from interaction between protesters and their adversary.⁵⁹ In an opportunity

spiral, for example, demands lead to concessions that encourage further demands, and so on. Farther afield, Andrew Walder's analysis of the Chinese Cultural Revolution shows how organizational incentives can generate positive feedback. "Mao inadvertently created the conditions for a self-reinforcing spiral of collective victimization," by making the loyalty of party members contingent on their unmasking of hidden enemies amongst them.⁶⁰ Denunciations led to increasing suspicion, which justified further denunciations, and so on.

Positive feedback cannot continue indefinitely, of course. At some point, the growth of collective mobilization and protest must be reversed. Although reversal is beyond the scope of this article, we can outline its causes.⁶¹ Almost by definition, mobilization and protest are inherently short-lived for any one group. Commitment cannot be maintained indefinitely at fever pitch – it dissipates unless channeled into protest. Similarly, protest cannot continue indefinitely – it eventually ends in decisive victory or defeat. There are also two more substantive causes of reversal. Firstly, an upsurge of collective action is driven by rising expectations of success. Confidence, however, is a double-edged sword, for overconfidence undermines the chances of success. A radicalization of demands tends to polarize the protagonists: moderates want to secure a minimum, while radicals want to push for more.⁶² Secondly, opponents eventually react. There is always a lag between mobilization and countermobilization. When opponents are taken by surprise, they need time to coordinate their resistance; they may also decide to delay a counterattack for strategic reasons. Nevertheless, at some point the real extent of their resistance becomes clear, which leads the protagonists drastically to lower their expectations of success.

Potential precipitants for the upsurge

Interdependence and inspiration are theoretically plausible mechanisms capable of generating an endogenous process of positive feedback, which might explain a wave of transgressive contention. Now it is necessary to move from theoretical explication to empirical demonstration. After all, such a wave might be explained in a more straightforward and conventional manner, by changes in external circumstances. Widening political opportunities, especially, are often used to explain an upsurge of transgressive contention. According to Edward Shorter and Charles Tilly's classic study of strikes in France, strike

waves “eventuate when it becomes apparent to the working classes as a whole that a point of critical importance is at hand in the nation’s political life...”⁶³ There has been a vigorous debate over the merits of political versus economic variables for explaining strikes.⁶⁴ What such explanations have in common is recourse to exogenous variables. In other words, people participate in collective action because their external circumstances have changed – and not because others have recently participated. To be conservative, then, we should look first for economic and political changes to explain the timing and magnitude of what happened in 1886. Only if more conventional explanations fail should we consider positive feedback.

Strikes and unionization, more than other kinds of transgressive contention, have been subject to consistent counting over long periods. Therefore it is possible to estimate statistically the impact of exogenous variables with time series analysis. Figure 2 shows one dependent variable, the logarithm of strike propensity, the number of workers involved in strikes divided by the nonagricultural labor force. (See Appendix for sources.) The period begins in 1881, when strikes were first counted, and ends in 1936, when recursive regression identifies a structural break in the series.⁶⁵ The independent variables test hy-

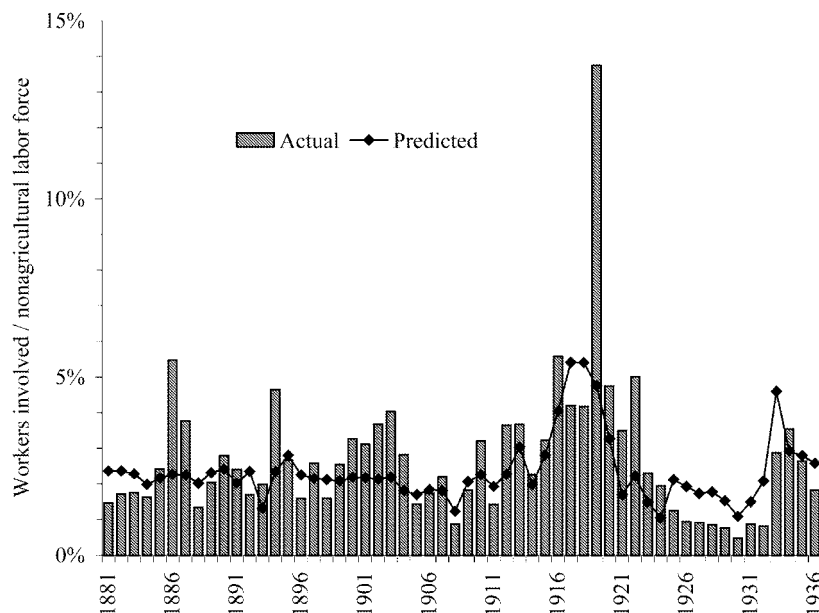


Figure 2. Strikes and lockouts in the United States, 1881–1936.

potheses from the literatures on strikes and on social movements. There are three economic variables: unemployment measures the relative bargaining power of labor and capital; growth in money earnings captures workers' grievances; price change indicates uncertainty for workers and employers alike.⁶⁶ There are three alternative measures for political opportunities. One counts the preponderance of Democrats in the House of Representatives, assuming that they were more favorable to labor, as suggested by David Snyder.⁶⁷ Another indicates the margin of victory secured by the President; Gerald Friedman shows this to be negatively associated with labor legislation and unionization across states, presumably because a more secure incumbent had less reason to court working-class voters.⁶⁸ The third is a dummy variable for Franklin Roosevelt's administration, which certainly encouraged trade unions.⁶⁹

Table 2 presents the results. Variables are transformed to give the best fit. This includes asymmetry: rising unemployment reduces strike propensity, for example, while falling unemployment has no discernible effect.⁷⁰ This effect, along with the effect of price volatility, is significantly different from zero and has the expected sign. Overall, however, the proportion of variance explained by the exogenous variables is

Table 2. Determinants of (logged) strike propensity, 1881–1936

Variable	Coefficient	Standard error	t-value
<i>Economic</i>			
Positive change in unemployment	-0.109	0.034	-3.18 ^b
Negative growth of money earnings	-0.055	0.035	-1.58
Absolute rate of price change	0.051	0.020	2.54 ^a
<i>Political</i>			
Ratio of Democrats to Republicans in House	0.000	0.002	0.06
Margin of victory of President in last election	-0.009	0.005	-1.90
Roosevelt administration	0.408	0.476	0.86
Autoregressive (t - 1)	0.518	0.130	3.99 ^c
Constant	0.770	0.135	5.69 ^c
R ² = 0.57			
s _e = 0.40			

Note: t-values significantly different from zero (two-tailed test) ^a at the 0.05 level, ^b at the 0.01 level, ^c at the 0.001 level.

exceedingly modest. Indeed, for prediction the autoregressive coefficient is far superior; the more workers struck one year, the more were expected the next year. Figure 2 also shows what would be predicted from the exogenous variables alone. Clearly no strike wave is expected in 1886; that year is actually predicted to be slightly below average. The procedure can be repeated for union density: total membership of labor organizations divided by the nonagricultural labor force. This yields still more meager results (not reported here for reasons of space). In summary, exogenous changes in economic or political circumstances cannot simply explain the magnitude of the strike wave of 1886.

Looking more closely at the years preceding 1886, we paradoxically find political *dis*opportunities. Unionists and socialists had tried to secure gains through the political system in the late 1870s and early 1880s, either by lobbying established politicians or by supporting socialist candidates. Repeated failure eventually convinced them of the futility of politics; they concluded that workers could rely only on their own economic power. This sentiment (later known as “voluntarism”) was clearly expressed when the Federation of Organized Trades and Labor Unions met in October 1884. “A united demand for a shorter working day,” declared Frank Foster, Secretary of the Legislative Committee, “backed by thorough organization, will prove vastly more effective than the enactment of a thousand laws depending for enforcement upon the pleasure of aspiring politicians or sycophantic department officials.”⁷¹ Thus the meeting resolved “that eight hours shall constitute a legal day’s labor from and after May 1, 1886.”⁷² It was a quixotic gesture by merely two dozen delegates representing an organization with neither money nor authority. As we see below, however, this date eventually became the focal point for the strike wave. The eight-hour demand may have been enhanced, coincidentally, by the course of the business cycle. In 1884, the economy was in the depths of recession; it began to recover at the end of 1885. Shortening the working day seemed to promise a solution for unemployment, which remained high in 1886; the onset of recovery perhaps made the enforcement of the demand more plausible. The importance of such a conjuncture is invariably difficult to assess. By itself, as we have seen, falling unemployment is not associated with high strike propensity.

To explain the magnitude of the upsurge in 1886, then, it is worth considering an endogenous process of positive feedback. In fact, labor historians and historical sociologists identify a precipitating event that fits neatly into an explanation of this kind.⁷³ In the summer of 1885, the

Wabash, St. Louis, and Pacific Railway locked out shopmen belonging to the Knights of Labor. In September, the Order's General Executive Board met face-to-face with the notorious railroad magnate Jay Gould and arranged a settlement. According to every account published in recent decades, this event had tremendous impact. Insofar as it inspired workers across America, by signaling the power possessed by the Knights of Labor, it could have triggered a process of positive feedback.

Unfortunately, the hypothesis does not survive empirical scrutiny. There is no evidence that the settlement of the Wabash lockout inspired other workers. Contemporaries did not mention it as a notable victory. The Knights of Labor declared that "concessions were made on both sides,"⁷⁴ and newspapers soon reported that scabs were replacing strikers.⁷⁵ There had been a larger railroad strike earlier in the year, which encompassed Gould's Southwestern system as well as the Wabash, which had actually ended in (short-lived) victory. But these railroad workers were scattered across small towns in the Midwest and Southwest, and did not have linkages to other kinds of workers.⁷⁶ There were other successful strikes (and boycotts) in 1885. Six-thousand laborers in the lumber mills of East Saginaw, Michigan, gained a genuine victory.⁷⁷ These were not sufficiently salient, however, to be the catalyst for the mobilization of workers across North America. Killing an enticing hypothesis with facts is always frustrating. It is also reassuring, though, for it proves that positive feedback is not *carte blanche* to claim that anything leads to anything else. Inspiration is something that can be tested against empirical evidence.

Mobilizing Chicago's working class

The existing historical explanations cannot explain the upsurge of 1886. To understand why it happened, we can focus on the mobilization of Chicago's workers over the winter and spring.⁷⁸ In the months before May, tens of thousands of workers joined existing organizations and founded new ones. This influx of new members was intertwined with workers' rising expectations. "Expectations" here do not denote what workers thought they deserved (as in theories of relative deprivation), but what they thought they could get: their estimation of their collective power vis-à-vis employers. This became a process of positive feedback. As each new group of workers became sufficiently optimistic to organize, the fact of their organization inspired others to follow suit.

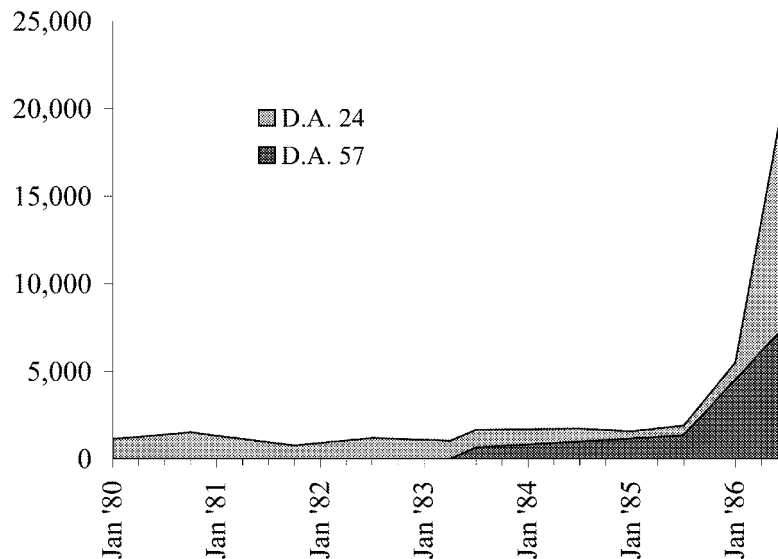


Figure 3. Membership of the Knights of Labor in Chicago, 1880–1886.

New hopes gave rise to new organization; new organization became evidence that such hopes were justified.

Contours of mobilization

Figures on membership reveal the magnitude and rapidity of mobilization. The only comprehensive statistics, over several years, come from the Knights of Labor. Knights in Chicago established District Assembly 24, to coordinate the city's Local Assemblies, in 1879. In 1883, dissident Local Assemblies formed a rival body, District Assembly 57. Both Districts dutifully reported mid-year membership to the Order's General Assembly.⁷⁹ In addition, District Assembly 24's minute book recorded membership at the beginning of 1885 and 1886.⁸⁰ Figure 3 shows the membership of both Assemblies, from 1880 to 1886. In the twelve months to July 1886, the number of Knights in Chicago increased ten-fold. The bulk of this increase obviously occurred in the first half of 1886. During that time, the Order as a whole gained almost half a million members (see Figure 1).

The precise timing of the influx can be established from another source. The Illinois Bureau of Labor Statistics surveyed trade unions

and Local Assemblies of the Knights of Labor in mid-1886, after the strikes of May.⁸¹ By then, a fifth of the city's workers (57,400) belonged to labor organizations; unionists (38,100) outnumbered Knights (22,000).⁸² Most importantly, the Bureau recorded the founding date – month as well as year – of each organization (treating different branches of a union as separate organizations). “Founding date” was not completely unambiguous. Those who furnished the information could refer to the date when their organization had been revived, or conversely, the earliest date remembered or recorded. A few unions founded during the upsurge had previously existed as benefit societies. Figure 4 depicts the founding of trade unions and Local Assemblies, from January 1885 onward; to take account of variation in size, it totals the number of charter members. The first indication that something new is happening comes in January. There were more charter members in that month than in the previous nine months altogether. This began a period of accelerating increases. There was something of a lull in February. But the increase in March exceeded January, April exceeded March, and May exceeded April. In fact the graph underestimates the increase in the last two months, because the Bureau missed dozens of newly founded Local Assemblies.⁸³

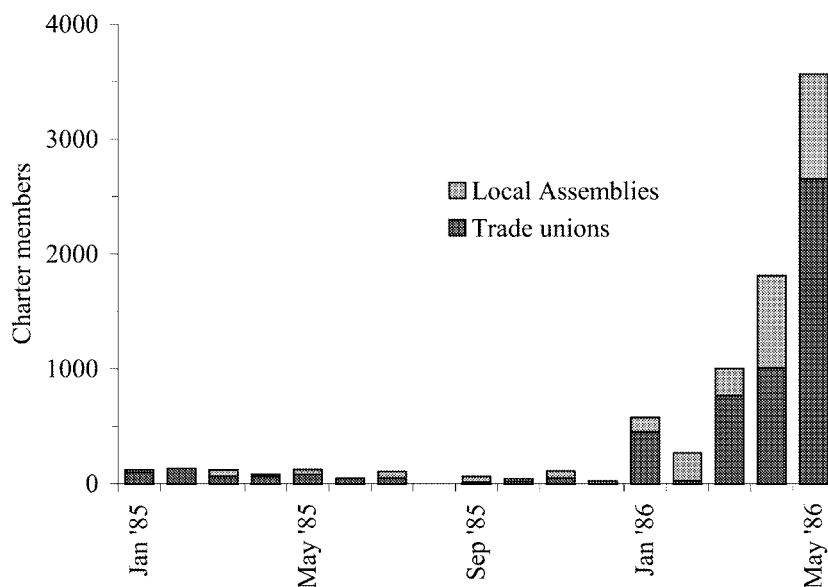


Figure 4. Labor organizations founded in Chicago, January 1885 to May 1886.

As we can see, growth accelerated as May approached: mobilization was closely connected with the campaign for the eight-hour day. Nevertheless, the upsurge was not planned by any formal organization. In the fall of 1885, the plan to enforce eight hours on May 1 was still hypothetical. The national Federation of Trades and Labor Unions had no resources or authority. Its local equivalent in Chicago, the Trades and Labor Assembly, did nothing except canvass the opinion of affiliated unions. The paramount leaders of the Knights of Labor opposed any plan of action, because they feared class conflict. The city's two District Assemblies followed their lead. Chicago also had a large and well-organized group of anarchists, who dominated a rival council of trade unions, the Central Labor Union. The anarchists dismissed the campaign as "a kind of soothing syrup for babies, but of no consequence to grown men."⁸⁴ To be sure, some activists – Knights and unionists – were enthusiastic, and formed an Eight Hour Association to promote the campaign. Yet even they were not optimistic. In December they still expected "that next May some of the stronger unions, such as the building trades, would get an eight-hour day, while the rest would be left in the cold."⁸⁵

Yet ordinary workers responded with unexpected enthusiasm. A meeting of the Central Labor Union denounced the anarchists for opposing the eight-hour day.⁸⁶ The anarchists had to follow the masses, and so in January they arranged a series of mass meetings. This in turn threatened conservative unionists in the Trades and Labor Assembly, who hurriedly organized meetings "to let people know that they do not want to be identified with the men now going round and discussing the eight-hour movement from an Anarchistic point of view."⁸⁷ The same dynamic played out in various occupations, where trade unions faced competition from the Knights of Labor. For example, carpenters dissatisfied with the moribund Local 21 of the Brotherhood of Carpenters and Joiners seceded to form a rival Local Assembly, which in turn prodded the Brotherhood into action.⁸⁸ Competition among separate organizations and rival activists ensured that workers' enthusiasm was not stifled: it was eventually harnessed and multiplied.

This multiplication depended on interpretive frames that posited a common identity and project for all workers – whatever their occupation, industry, location, or ethnicity. Activists did not agree on what this project was. Some told workers to preserve harmony between the classes; others urged them to overthrow capitalism. There was nonetheless a common denominator: unity and solidarity. These sentiments

were expressed in “that beautiful watchword of Knighthood”: “An Injury to One is the Concern of All.”⁸⁹ The phrase was everywhere in 1886, among unionists as well. For labor historians, it signifies a rejection of capitalism: a rejection of the relentless competition that pitted individuals against each other.⁹⁰ This normative injunction also implied interdependence, and it expressed the power of collective action. As an organization, the Knights of Labor embodied interdependence. No matter how small the Local Assembly, its members felt that they had the support of workers across the continent.

The unity of workers was not merely rhetorical. The eight-hour day was a common aspiration. This facilitated inspiration: if one group of workers had organized for shorter hours, that fact was relevant for others. There was even a degree of interdependence, because the length of the working day was a convention common to most particular markets for manual labor. As more and more workers gained eight hours, the remaining employers might offer less resistance to the demand. Activists deliberately fostered interdependence and inspiration. At a meeting to organize brewery workers, to take one example, speakers pointed to the powerful brewers’ union in New York City, and to the recent organization of other workers in Chicago. Brewery workers, exhorted the chairman, “must finally understand that unity is strength, and that going hand-in-hand with the organized workers of other industries would only be to their advantage.”⁹¹ Such appeals seem to have resonated with the audience. One week later, members of the new union cheered on hearing that lumberyard laborers and butchers had organized a few hours before.⁹² Three huge rallies for the eight-hour day were held in March and April, attracting several thousand workers. These visibly manifested the masses of workers prepared to take collective action.

Patterns of percolation

Positive feedback is indicated by the acceleration of mobilization in the months before May, and also by the surprise of activists – who followed as much as led the movement. Activists nevertheless facilitated positive feedback, by forging connections among various groups of workers. How, then, did mobilization percolate through the working class? Tracing the actual connections between one group of workers and another is difficult, given the limitations of the historical record. Indeed, dividing workers into distinct “groups” is somewhat arbitrary; we can

only acknowledge the groups realized by workers themselves, when they founded a new labor organization rather than joining an existing one.

The diffusion of collective action can be illustrated by Chicago's famous meatpacking factories, located beyond the city limits in "Packingtown." They employed twenty-thousand workers at the height of the killing season. Of these, barely a few hundred were organized at the end of 1885. There were three proximate groups of workers, connected by industry, occupation, or location. Firstly, the packing firms employed some coopers. Although few in number, coopers were well-organized and militant. Secondly, there were also butchers working in shops in the city, though the extent of mobility within the occupation is unclear. The shop butchers formed a trade union in March. Thirdly, railroad switchmen worked in the yards, adjacent to the packers. When they struck the Lake Shore and Michigan Southern Railway in April, other workers in the neighborhood attacked the company's trains, and laborers at one packing plant refused to load its cars.⁹³

Until the eve of May, Packingtown itself was quiescent. (The only exception was the founding of one Local Assembly in February.) Then, at the end of April, packinghouse workers held a mass meeting to demand eight hours, supported by the coopers.⁹⁴ The demand was actually presented to employers by a cooper. Packinghouse workers were certainly interdependent: a handful of large firms employed everyone from laborers to butchers. Either all would succeed or none would. They therefore suddenly shifted from quiescence to militancy. Within a week, thousands engaged in collective action – going out on strike and simultaneously organizing several Local Assemblies.

The propagation of collective action can be examined systematically, by tracing the order in which different groups of workers mobilized. In 1885, organization was largely confined to skilled craftsmen. By mid-1886, it covered almost the full range of working-class jobs. Of the forty occupations distinguished in the Census, all but two were represented in the movement.⁹⁵ Considering wages as a measure of power in the labor market, we find a clear pattern of percolation. The Illinois Bureau asked each union and Assembly to report the wage of members at mid-1886.⁹⁶ These data are far superior to occupational or industrial averages culled from other sources. Wage rates (and founding date) are available for 146 Assemblies and unions.⁹⁷ The wage rate utilized is the average of the lowest and highest wages, transformed where necessary into the equivalent daily rate.

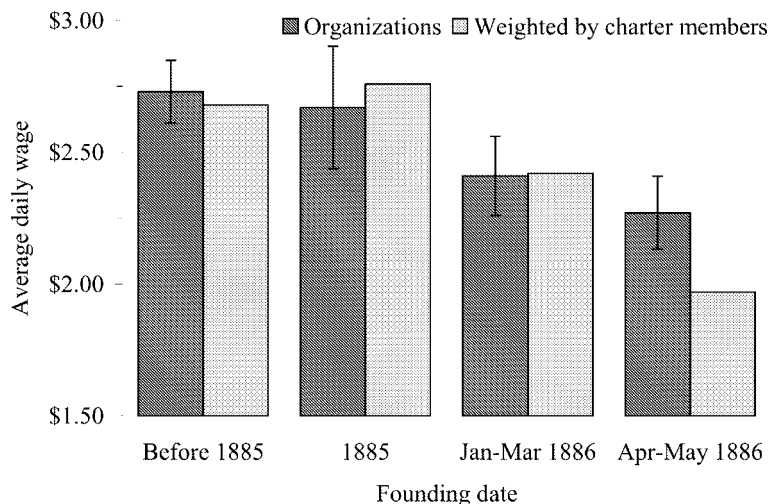


Figure 5. Average wage of members of labor organizations in Chicago, 1886 (excluding clerical employees).

Figure 5 divides organizations according to founding date and shows the average wage of their members (vertical bars indicate the standard deviation). Five organizations for clerical employees are excluded; they are considered below. There is little difference between 1885 and preceding years. In 1886, organization diffused to lower-paid workers.⁹⁸ Within the upsurge, there is a noticeable difference between organizations founded from January to March and those founded in April and May. This difference is still more pronounced when the average wage is weighted by the organization's charter members. This cross-tabulation can be reversed. Figure 6 divides organizations according to the average wage of their members, and shows when they were founded. In the highest wage bracket, two-thirds were founded before 1886. In the lowest, half were founded in the last three months of the upsurge.

The lowest-paid workers, of course, had minimal bargaining power; employers could easily replace them. In terms of the threshold model, they had the highest thresholds: to be persuaded to organize, they had to see many other groups of workers joining the movement. Like unskilled workers, clerical employees were among the last to organize; they also had high thresholds for inspiration. The reason, however, was different. Clerks had opportunities for individual advancement not open to manual workers. While their average wage was comparable to

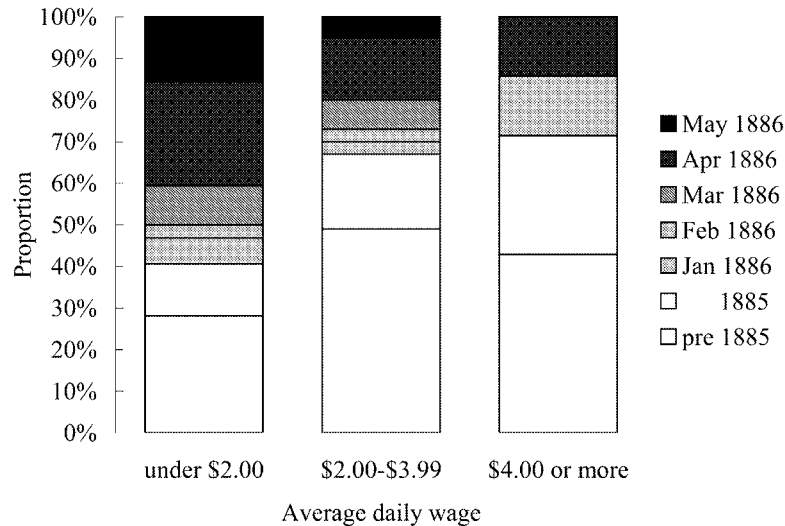


Figure 6. Founding date of labor organizations in Chicago, 1886 (excluding clerical employees).

craftsmen's, the maximum was much higher. Therefore, they were reluctant to organize collectively. Notably they did not strike in May. In summary, then, organization percolated from skilled craftsmen down the occupational structure to unskilled workers, and up to white-collar employees. This is compelling evidence that workers who organized in April or May were inspired by the organization of others in previous months.

Expectations of power

Workers' optimism spiraled upward as the number of organized workers grew. These were second-order expectations: workers became hopeful because other workers apparently had high hopes. We look in vain for any striking victory, which could have raised workers' expectations. The most prominent strike in America in the spring of 1886 involved (once again) railroad workers on Gould's Southwestern system, and it ended in a terrible defeat. In Chicago, three major strikes ended in March and April. Nailers involved in a dispute with the Calumet Iron and Steel Company finally left en masse for a plant in Wisconsin; boxmakers striking against Maxwell Brothers returned to work on their employer's terms; hundreds of workers at the McCor-

mick Harvesting Machine Company were permanently replaced after being locked out. Yet these defeats did not discourage other workers. None of the conflicts arose from the mobilization of workers in the spring of 1886; they originated in events of the previous year. Moreover, none of them involved the demand for shorter hours.

The spiraling optimism of workers is seen in the radicalization of demands. The demand for the eight-hour day was ambiguous. Did it imply the same hourly wage? If so, workers would have their income cut by 20 percent, working eight instead of ten hours. Or did it mean that workers would keep the same daily wage? In that case, employers would have their labor costs raised by 25 percent. This ambiguity had been ignored when the campaign was formulated. In January, unionists in the Trades and Labor Assembly declared their “readiness to sacrifice wages,” fearing only “the exorbitant demands [of] our fellow-workers.”⁹⁹ As the campaign gathered momentum, however, more and more workers began to demand “eight for ten”: eight hours’ work for ten hours’ pay. Unskilled workers simply could not afford any reduction in income. Besides, as the ranks of organized labor grew, all workers had more reason to feel confidence in their collective power.

Workers’ optimism was reinforced when employers began to offer concessions. About one in ten employers conceded shorter hours before May.¹⁰⁰ This was an effect rather than a cause of mobilization: in almost every case, concessions followed organization. Clothing cutters, who founded a Local Assembly in March, declared that they wanted to inaugurate shorter hours on April 5.¹⁰¹ Almost immediately, wholesale clothing dealers reduced their hours to eight, with no reduction in pay.¹⁰² The sequence was repeated for brewers, bakers, and butchers. The sole unprompted concessions came from tobacco companies, who decided that conceding an eight-hour day would attract working-class customers.

In the last weeks before May, there were signs of exaggerated overconfidence, especially among newly organized workers. The employees of a large furniture manufacturer, Frank Mayer and Company, demanded an immediate wage increase of 20 percent, as well as eight hours in May – which amounted to a 50 percent increase in hourly labor costs. When this was refused, 300–400 workers struck or were locked out.¹⁰³ Their action was denounced in the Trades and Labor Assembly as “one of the severest blows the eight-hour movement had yet received.” The Möbelarbeiter Union’s delegate to the Assembly

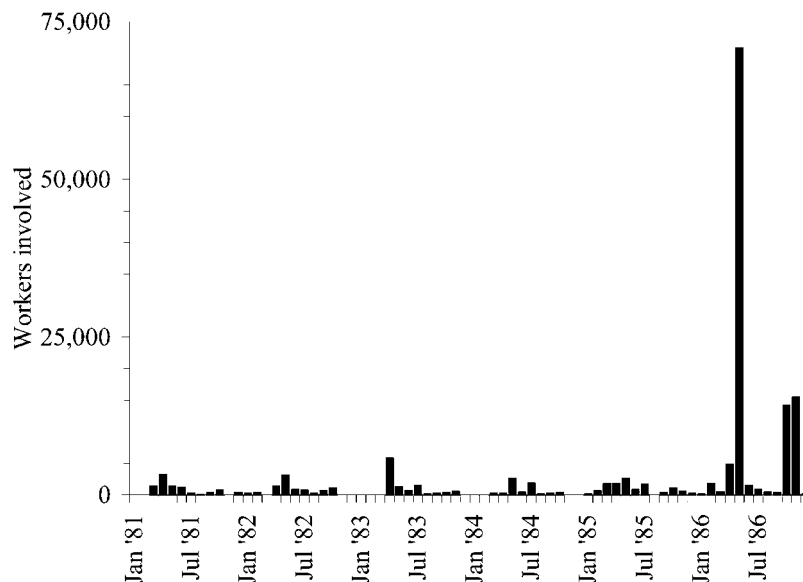


Figure 7. Strikes and lockouts in Chicago, 1881–1886.

concurrent, and disavowed his union's endorsement of the strike. Over half the members were new, he explained, "raw and undisciplined," believing "they could get anything they wanted."¹⁰⁴ On the eve of May, the comments of workers revealed their sense of overwhelming strength. A freight handler predicted the response of railroads: "I know some of them will fight it, but you'll see that the majority will give in after a few days."¹⁰⁵

Culmination: Strikes in May

When May finally arrived, the depth of mobilization really became apparent. As Figure 7 shows, 66,000 workers struck on Saturday, May 1, and the following Monday. Perhaps another 37,000 gained concessions without having to strike.¹⁰⁶ Thousands more made demands, were refused, but did not strike. Altogether, over a hundred-thousand workers participated – close to half the wage workers in Chicago. In comparison, perhaps 40,000 workers belonged to labor organizations by the beginning of May. Organization was not a precondition for protest; it was frequently a result. Many groups of workers struck first and then formed a union or Assembly, which is why

organizational founding peaked in May. A wave of enthusiasm carried along many thousands of workers who had previously given no indication of militancy. This was recalled by an anarchist newspaper: "People in such times become unconscious of the current which draws them into the whirlpool; ... the spirit of unrest seems to be propagated through the very atmosphere, seems to be communicated to people who previously had been impossible to influence."¹⁰⁷

Like organizing, striking was subject to positive feedback. Many workers struck in the first days of May because others had done so. Propagation was most visible when strikers from one workplace marched en masse to get others to join them. This was used especially by the unorganized. Freight handlers provide an illustration. The Chicago, Burlington, and Quincy Railroad was the center of militancy. Its men were the first to demand shorter hours and the first to strike. They marched along to other depots on the evening of April 30, and again on the morning of May 1.¹⁰⁸ The responses varied at different depots. For some, it was clearly a matter of coordination: they were just waiting for the moment to go out on strike. As soon as the marchers approached, they cheered and immediately quit work. Others were apparently more reluctant, but were persuaded by the size of the crowd. At one depot, it was simply intimidation. The men there refused to join and locked themselves inside; the crowd returned with reinforcements and pulled down the doors. With that tangible reminder of interdependence, the men inside decided to join the strike. Altogether, within a few hours the number on strike grew from 400 to 1,500.

With tens of thousands of workers out on strike in the first days of May, this article takes leave of Chicago. It is appropriate to end with uncertainty about the result – just as workers did not know whether they would win the eight-hour day.

Conclusion

The rapid mobilization of workers in Chicago – and elsewhere in the United States – in 1886 remains inexplicable without reference to positive feedback. Changes in political or economic circumstances do not predict any upsurge in 1886. The settlement of the dispute on the Wabash Railway in the fall of 1885 was not a victory for the Knights of Labor. The campaign for the eight-hour day focused the eventual strike wave on May 1, but it does not explain the magnitude of the upsurge.

The lack of a sufficient initiating “cause” (or set of causes) might seem disappointing. Remember, though, that nonlinearity is a corollary of positive feedback. The task of explanation is not only to locate exogenous causes; it is also to unravel endogenous processes.

In Chicago the process began in the fall when a few committed activists tried to prepare for the eight-hour demand in May. Craft unionists were uninterested in mobilizing the unorganized, while anarchists rejected shorter hours as a delusion. The unexpected enthusiasm of ordinary workers forced them to join the eight-hour campaign, for fear of losing ground to rival organizations or rival factions. Positive feedback occurred as the mobilization of each new group of workers inspired others to follow suit. There was a clear order. Mobilization percolated through the working class – from skilled craftsmen down to unskilled laborers, and up to white-collar employees. Workers who had least to gain from collective action were the last to organize. Inspiration was encouraged by unionists and Knights, who disseminated information about the actions of other workers. The attribution of similarity was enhanced by two factors: the eight-hour cause, which potentially appealed to all workers, regardless of occupation or industry, and the ideal of working-class interdependence, embodied in the Knights of Labor. Positive feedback meant a very rapid increase in membership, out of all proportion to changes in previous years. It also meant an escalation of workers’ expectations of relative power, to an extent that was not justified by any change in external circumstances.

This explanation is particular, of course, to 1886. But the same kind of endogenous process of positive feedback – and mechanisms of interdependence and inspiration – should be found elsewhere. How would we recognize a process of positive feedback? Quantitatively, when participation in organization or protest increases suddenly and rapidly, over the course of weeks or months. Qualitatively, when participants or knowledgeable observers admit to being surprised by the speed and extent of change. These are two indicators that make positive feedback a plausible hypothesis. It remains merely a hypothesis until tested against alternatives. Changing economic or political circumstances may suffice to explain why so many people took part. If so, then positive feedback is redundant. If not, then interdependence and inspiration can be investigated in more detail. Seek evidence that people were persuaded to participate by the actions of others. Trace the bounds of solidarity and similarity. Reconstruct the order of participation, to see whether those with less to gain or more to fear (with higher

“thresholds”) participated only after they had seen others join. In summary, then, this kind of explanation is generalizable and testable.

One likely example is the wave of sit-ins by Blacks protesting against segregation in the American South in 1960.¹⁰⁹ The sit-ins spread rapidly in February and March to encompass more than seventy cities, surprising even activists in the Civil Rights movement. Although desegregation is usually treated as a single public good, it is more appropriate to differentiate black communities in each city. Gradual “change processes” like urbanization and increasing enrollment of black college students do not explain why these sit-ins were clustered in the space of a few months. There was a significant inspirational event (which really did have the effect erroneously attributed to the Wabash settlement in 1885): a sit-in in Greensboro, North Carolina, on February 1. Other communities were inspired simply by the example of black students defying segregation; the outcome of their defiance was unknown for months. As in 1886, collective action was inspired by expected facts rather than accomplished ones. Similarly, some activists enthusiastically helped to propagate protests, while others belatedly supported the campaign for fear of losing credibility. The order in which different black communities initiated their own sit-ins also followed a similar pattern: sit-ins happened earlier in less repressive states such as North Carolina and Florida.

Theoretically, the concept of positive feedback allows us to recognize a fundamental insight, appearing in various guises in different intellectual lineages: that people may act simply because others have recently done so, thus creating – for a short time – a dynamic process that is self-reinforcing. In transgressive contention, such a process can be generated by two distinct mechanisms: interdependence and inspiration. Neither assumes irrationality. The ghost of collective behavior, which continues to haunt the sociological literature, can finally be laid to rest. The significance of inspiration is worth emphasizing. Models of collective action are predicated on a unitary public good, and therefore focus attention on interdependence. In the case of 1886, not all workers shared a common fate. If carpenters were successful, for example, that barely increased the chance that freight handlers would win shorter hours. Yet workers did use the experience – and indeed, even the expectations – of other groups to estimate their own prospects for success.

These mechanisms should be seen as potential components of explanation, and not a rival “theory.” Consider the most prominent factors in recent literature: political opportunities, formal organization, social networks, and cultural frames. In other cases, political opportunities may well help to trigger a process of positive feedback. Franklin Roosevelt’s National Industrial Recovery Act, which promised workers the right to unionize, is one example. Another is Mikhail Gorbachev’s declaration of the “Sinatra doctrine” – that the Soviet Union would not intervene in Eastern Europe – in 1989.¹¹⁰ Formal organization can play an important role in amplifying positive feedback. It is important to note, however, that the leaders of organizations may not welcome an influx of members or an eruption of protests. Hence the significance of inter- and intra-organizational competition. Social networks shape the extent of solidarity, and hence the limits of interdependence. In addition, networks of activists convey inspiration on a larger scale, across national boundaries, for example.¹¹¹ Cultural frames construct perceptions of similarity, and hence the limits of inspiration. This is a neglected aspect of framing. To take a negative example, unionists in the 1960s who did not frame the labor movement as a social movement were not inspired to adopt the corresponding tactical innovations.¹¹² In conclusion, then, my argument for positive feedback does not displace existing elements of explanation. Rather, it explains why collective mobilization can emerge suddenly and increase so rapidly, taking everyone by surprise.

Perhaps my argument has a more general implication for the study of change over time. This article has emphasized rapid change. In social science, however, gradual trends are awarded far greater significance than rapid fluctuations.¹¹³ To an extent this reflects the limitation of historical statistics, which are usually confined to annual intervals. In part, however, this is an intellectual bias – revealed occasionally when “moving averages” are used to smooth out the inconvenient fluctuations of history. I have tried to show that rapid change can also be analyzed systematically, without falling back on traditional historical narrative. *Histoire événementielle* is too important to be left to historians. On the other hand, I hope to have provided an explanation for rapid change – a process of positive feedback – that accords with the intuition of a historian.

Appendix: Data for the analysis of strikes, 1881–1936

Logged strike propensity = $\ln(\text{Strikers} / \text{Workers} * 100)$

Strikers: number of workers involved in strikes and lockouts.¹¹⁴ Workers: total labor force minus agricultural employment.¹¹⁵

Positive change in unemployment =

$\text{Unemployment}_t / \text{Unemployment}_{t-1} * 100 - 100$, or zero, whichever is greater.

Unemployment: unemployment rate for the civilian labor force (estimates described below).

Negative growth of money earnings =

$\text{Earnings}_t / \text{Earnings}_{t-1} * 100 - 100$, or zero, whichever is smaller.

Earnings: annual money earnings (when employed) of nonfarm employees.¹¹⁶

Absolute rate of price change = $|\text{Price}_t / \text{Price}_{t-1}| * 100 - 100$.

Price: consumer price index.¹¹⁷

Ratio of Democrats to Republicans in House =

$\text{Democrats} / \text{Republicans} * 100 - 100$.

Democrats and Republicans: members of the House of Representatives.¹¹⁸

Margin of victory of President in last election =

$\text{Votes}^{\text{President}} / (\Sigma \text{Votes} - \text{Votes}^{\text{President}}) * 100 - 100$.

Votes: popular vote in the Presidential election.¹¹⁹

Unemployment

Stanley Lebergott's unemployment series begins in 1890.¹²⁰ Jeffrey Williamson provides figures back to 1870, but his estimation uses an implicit rate (factored into annual earnings) that does not correspond to the explicit series, and it proceeds back from 1900, thus losing ten years of the series.¹²¹ Therefore I construct a new estimate for the unemployment rate of the civilian labor force before 1890, using a similar method to Williamson's. Three proxy series are utilized: (1) the index of manufacturing production used by Williamson; (2) the Gallman–Kuznets series of Net National Product; and (3) Dun and Bradstreet's business bankruptcy rate.¹²² All three are combined because they give contrary indications of the strength of recovery in 1886.

The first step is to detrend each proxy series (s), by applying the regression equation

$$\hat{s}_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2$$

for the period 1870 to 1913. This creates a “capacity utilization index” (c) defined as

$$c_t = (s_t - \hat{s}_t) / s_t$$

Then unemployment (u) is regressed on this index in the equation

$$\hat{u}_t = \beta_0 + \beta_1 c_t + \beta_2 c_t^2$$

for the period 1890 to 1913. The correlation coefficients are respectively (1) 0.76, (2) 0.90, (3) 0.85. Each equation is used to predict the unemployment rate before 1890. The three predictions are combined by taking their geometric mean:

1880	3.2%
1881	1.8%
1882	1.0%
1883	2.9%
1884	5.7%
1885	7.0%
1886	3.9%
1887	4.0%
1888	5.9%
1889	5.8%

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Audiences at Harvard University’s American Political Development Workshop and Oxford University’s Economic and Social History Seminar provided insightful criticisms. Special thanks are due to Andy Andrews, Tak-wing Chan, Gerald Friedman, Marshall Ganz, Monica McDermot, Claire Morton, Zaid Munson, Avner Offer, Paul Pierson, and Theda Skocpol.

Notes

1. Total membership figures (as of the first of the month) were published in Knights of Labor, General Assembly, *Proceedings*, reproduced in *Papers of Terence Vincent Powderly, 1864–1924*, and *John William Hayes, 1880–1921, the Knights of Labor* (microfilm, Glen Rock, N.J.: Microfilming Corporation of America, 1974–75), 1879 (ii): 117; 1880: 202f.; 1881: 333; 1882: 391; 1883: 528; 1884: 796; 1885: 174; 1886: 328. The other series is calculated from the “per capita tax” receipts reported by the General Secretary: membership at the beginning of each quarter equals the total receipts received during the quarter, divided by the tax rate of 6¢ per member

- per quarter, following Richard Oestreicher, "A Note on Knights of Labor Membership Statistics," *Labor History* 25/1 (1984): 102–108.
2. Frederick [Friedrich] Engels, Preface to *The Condition of the Working Class in England in 1844*, tr. Florence Kelley Wischnewetzky (New York: John W. Lovell Company, 1887), i.
 3. E. J. Hobsbawm, "Economic Fluctuations and some Social Movements since 1800" (first published 1952), in *Labouring Men: Studies in the History of Labour* (New York: Basic Books, 1964), 126. See also Richard B. Freeman, "Spurts in Union Growth: Defining Moments and Social Processes," National Bureau of Economic Research Working Paper, 6012 (1997).
 4. George Rudé, *The Crowd in History: A Study of Popular Disturbances in France and England, 1730–1848*, rev. edition (London: Lawrence and Wishart, 1981), 25.
 5. Eric Hobsbawm and George Rudé, *Captain Swing* (London: Phoenix Press, 1969), 196.
 6. Susanne Lohmann, "The Dynamics of Informational Cascades: The Monday Demonstrations in Leipzig, East Germany, 1989–91," *World Politics* 47/1 (1994): 42–101, table 2, 66. See also Karl-Dieter Opp, Peter Voss, and Christiane Gern, *Origins of a Spontaneous Revolution: East Germany, 1989* (Ann Arbor: University of Michigan Press, 1995).
 7. Doug McAdam, Sidney Tarrow, Charles Tilly, *Dynamics of Contention* (Cambridge: Cambridge University Press, 2001), 7–8. Although they restrict their subject to contentious "politics" – defined as engaging the national state – this is unnecessary.
 8. McAdam, Tarrow, Tilly, *Dynamics of Contention*, 312.
 9. Leon Fink, *Workingmen's Democracy: The Knights of Labor and American Politics* (Urbana and Chicago: University of Illinois Press, 1983); Leon Fink, "The New Labor History and the Powers of Historical Pessimism: Consensus, Hegemony, and the Case of the Knights of Labor," *Journal of American History* 75/1 (1988): 115–136; Gerald Friedman, *State-Making and Labor Movements: France and the United States, 1876–1914* (Ithaca and London: Cornell University Press, 1998); Eric L. Hirsch, *Urban Revolt: Ethnic Politics in the Nineteenth Century Chicago Labor Movement* (Berkeley: University of California Press, 1990); Gregory S. Kealey and Bryan D. Palmer, *Dreaming of What Might Be: The Knights of Labor in Ontario, 1880–1900* (Cambridge: Cambridge University Press, 1982); Richard Jules Oestreicher, *Solidarity and Fragmentation: Working People and Class Consciousness in Detroit, 1875–1900* (Urbana and Chicago: University of Illinois Press, 1986); Richard Schneirov, *Labor and Urban Politics: Class Conflict and the Origins of Modern Liberalism in Chicago, 1864–97* (Urbana and Chicago: University of Illinois Press, 1998); Kim Voss, *The Making of American Exceptionalism: The Knights of Labor and Class Formation in the Nineteenth Century* (Ithaca and London: Cornell University Press, 1993).
 10. A recent comprehensive explanation is Seymour Martin Lipset and Gary Marks, *It Didn't Happen Here: Why Socialism Failed in the United States* (New York and London: W. W. Norton, 2000); see also Michael Biggs, "A Century of American Exceptionalism: A Review," *Thesis 11* 68 (2002): 110–21.
 11. The term is from Doug McAdam and William H. Sewell, Jr., "It's about Time: Temporality in the Study of Social Movements and Revolutions," Ronald R. Aminzade et al., *Silence and Voice in the Study of Contentious Politics* (Cambridge and New York: Cambridge University Press, 2001).
 12. David Montgomery, *Beyond Equality: Labor and the Radical Republicans, 1862–1872* (New York: Alfred A. Knopf, 1967).

13. This second dimension is treated elsewhere: Michael Biggs, "Strikes as Sequences of Interaction: The American Strike Wave of 1886," *Social Science History* 26/3 (2002): 583–617.
14. Kenneth E. Boulding, "Business and Economic Systems," in John H. Milsum, editor, *Positive Feedback: A General Systems Approach to Positive/Negative Feedback and Mutual Causality* (Oxford and New York: Pergamon Press, 1968), 103. Boulding actually calls this "disequilibrating" feedback. Another synonymous term is "self-reinforcing process."
15. Engels, Preface to *The Condition of the Working Class in England in 1844*, i.
16. Quoted in Ruth A. Allen, *The Great Southwest Strike* (Austin: The University of Texas, 1942), 26.
17. Eric J. Hobsbawm, "The 'New Unionism' Reconsidered," in Wolfgang J. Mommsen and Hans-Gerhard Husung, editors, *The Development of Trade Unionism in Great Britain and Germany, 1880–1914* (London: George Allen and Unwin, 1985), 18. Explaining the revolt of English laborers in 1830, Hobsbawm and George Rudé continually refer to fires and contagion: *Captain Swing*, 214.
18. Michelle Perrot, *Workers on Strike: France, 1871–1890* (Leamington Spa: Berg, 1987), 17.
19. Barrington Moore, *Injustice: The Social Bases of Obedience and Revolt* (White Plains, N.Y.: M. E. Sharpe, 1978), 244.
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21. Herbert Blumer, "Collective Behavior," in Alfred McClung Lee, editor, *Principles of Sociology*, rev. edition (New York: Barnes and Noble, 1951), 170.
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27. Sidney Tarrow, *Power in Movement: Social Movements and Contentious Politics*, 2nd edition (Cambridge: Cambridge University Press, 1998). See also Mark N. Katz, *Revolutions and Revolutionary Waves* (Basingstoke and London: Macmillan Press, 1997).
28. Doug McAdam, "'Initiator' and 'Spin-Off' Movements: Diffusion Processes in Protest Cycles," in Mark Traugott, editor, *Repertoires and Cycles of Collective Action* (Durham and London: Duke University Press, 1995).
29. Tarrow, *Power in Movement*, 145.
30. McAdam, "'Initiator' and 'Spin-Off' Movements," 218.
31. Anthony Oberschall, "The 1960s Sit-ins: Protest Diffusion and Movement Take-Off," *Research in Social Movements, Conflict and Change* 11 (1989): 31–53.
32. Charles Kurzman, "Structural Opportunity and Perceived Opportunity in Social-

- Movement Theory: The Iranian Revolution of 1979," *American Sociological Review* 61/1 (1996): 153–170. Curiously, this explanation is framed in terms of political opportunities, though the change is neither located in the state nor exogenous.
33. Andrew Abbott, "Transcending General Linear Reality," *Sociological Theory* 6/2 (1988): 169–186.
 34. Carol Conell, "The Local Roots of Solidarity: Organization and Action in Late-Nineteenth-Century Massachusetts," *Theory and Society* 17/3 (1988): 365–402; Carol Conell and Kim Voss, "Formal Organization and the Fate of Social Movements: Craft Association and Class Alliance in the Knights of Labor," *American Sociological Review* 55/2 (1990): 255–269; Kim Voss, "Labor Organization and Class Alliance: Industries, Communities, and the Knights of Labor," *Theory and Society* 17/3 (1988): 329–364; Voss, *The Making of American Exceptionalism*, ch. 5.
 35. Voss, *The Making of American Exceptionalism*, table 9, 156–157.
 36. Peter Hedström, "Contagious Collectivities: On the Spatial Diffusion of Swedish Trade Unions, 1890–1949," *American Journal of Sociology* 99/5 (1994): 1157–1179; Peter Hedström, Rickard Sandell, Carlotta Stern, "Mesolevel Networks and the Diffusion of Social Movements: The Case of the Swedish Social Democratic Party," *American Journal of Sociology* 106/1 (2000): 145–172.
 37. Carol Conell and Samuel Cohn, "Learning from Other People's Actions: Environmental Variation and Diffusion in French Coal Mining Strikes, 1890–1935," *American Journal of Sociology* 101/2 (1995): 366–403.
 38. Daniel J. Myers, "Racial Rioting in the 1960s: An Event History Analysis of Local Conditions," *American Sociological Review* 62/1 (1997): 94–112; "The Diffusion of Collective Violence: Infectiousness, Susceptibility, and Mass Media Networks," *American Journal of Sociology*, 106/1 (2000): 173–208.
 39. Everett M. Rogers, *Diffusion of Innovations*, 3rd edition (New York and London: The Free Press and Collier Macmillan Publishers, 1983), 5.
 40. There is a growing body of literature in economics, for example, W. Brian Arthur, "Positive Feedbacks in the Economy," *Scientific American* 262/2 (1990): 80–85; Elettra Agliardi, *Positive Feedback Economies* (Basingstoke: Macmillan, 1998).
 41. Compare, for example, the classic studies of the diffusion of hybrid corn with recent work by economists (cited above), demonstrating how the adoption of technological standards can be decisively altered by contingent events.
 42. On "mechanism," see Jon Elster, *Nuts and Bolts for the Social Sciences* (Cambridge: Cambridge University Press, 1989); Jon Elster, *Alchemies of the Mind: Rationality and the Emotions* (Cambridge: Cambridge University Press, 2000), ch. 1.
 43. Peter Hedström, "Rational Imitation," in Peter Hedström and Richard Swedberg, editors, *Social Mechanisms: An Analytical Approach to Social Theory* (Cambridge: Cambridge University Press, 1998), 311.
 44. Thomas C. Schelling, *Micromotives and Macrobehavior* (New York: Norton, 1978), 17.
 45. Quoted in Colin Barker, "Fear, Laughter, and Collective Power: The Making of Solidarity at the Lenin Shipyard in Gdansk, Poland, August 1980," in Jeff Goodwin, James M. Jasper, and Francesca Polletta, editors, *Passionate Politics: Emotions and Social Movements* (Chicago and London: University of Chicago Press, 2001), 178.
 46. Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, 2nd edition (Cambridge, Mass. and London: Harvard University Press, 1971).
 47. The importance of "altruistic" punishment in preventing free-riding is demonstrated experimentally by Ernst Fehr and Simon Gächter, "Altruistic Punishment in Humans," *Nature* 415 (2002): 137–140.

48. Quoted in Rick Fantasia, *Cultures of Solidarity: Consciousness, Action, and Contemporary American Workers* (Berkeley: University of California Press, 1988), 96.
49. Chong, *Collective Action and the Civil Rights Movement*, ch. 6.
50. Granovetter, "Threshold Models of Collective Behavior"; Mark Granovetter and Roland Soong, "Threshold Models of Diffusion and Collective Behavior," *Journal of Mathematical Sociology* 9 (1983): 165–179.
51. Schelling, *Micromotives and Macrobehavior*, 14.
52. Pamela E. Oliver, "Bringing the Crowd Back In: The Nonorganizational Elements of Social Movements," *Research in Social Movements: Continuity and Change* 11 (1989), 11.
53. Doug McAdam, "Tactical Innovation and the Pace of Insurgency," *American Sociological Review* 48/6 (1983): 735–754.
54. This distinction is borrowed from A. C. Pigou, *Industrial Fluctuations*, 2nd edition (London: Macmillan, 1929), 73.
55. The negative effect of failure may be outweighed by the first and second reasons for inspiration, however. For French coal miners, even failed strikes raised the probability of another strike; Conell and Cohn, "Learning from Other People's Actions."
56. Abhijit V. Banerjee, "A Simple Model of Herd Behavior," *Quarterly Journal of Economics* 107/3 (1992): 797–817; Sushil Bikhchandani, David Hirshleifer, and Ivo Welch, "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy* 100/5 (1992): 992–1026; André Orlean, "Informational Influence and the Ambivalence of Imitation," in Jacques Lesourne and André Orlean, editors, *Advances in Self-Organization and Evolutionary Economics* (London: Economica, 1998). Although the expression "herd behavior" may suggest a reversion to irrationality, these models assume rational decision-making under uncertainty.
57. Banerjee, "A Simple Model of Herd Behavior," 798.
58. McAdam, Tarrow, Tilly, *Dynamics of Contention*.
59. McAdam, Tarrow, Tilly, *Dynamics of Contention*.
60. Andrew G. Walder, "Collective Behavior Revisited: Ideology and Politics in the Chinese Cultural Revolution," *Rationality and Society* 6/3 (1994): 412.
61. Reversal is explored at greater length in Biggs, "Strikes as Sequences of Interaction."
62. Ruud Koopmans, "The Dynamics of Protest Waves: West Germany, 1965 to 1989," *American Sociological Review* 58/5 (1993): 637–658.
63. Edward Shorter and Charles Tilly, *Strikes in France, 1830–1968* (Cambridge: Cambridge University Press, 1974), 345. They continue "and when the latticework of organization suffices to transform these individual perceptions of opportunity into collective action," implying that political opportunities are a necessary, rather than a sufficient, condition.
64. The emphasis on politics was applied to America by David Snyder: "Institutional Setting and Industrial Conflict: Comparative Analyses of France, Italy and the United States," *American Sociological Review* 40/3 (1975): 259–278; "Early North American Strikes: A Reinterpretation," *Industrial and Labor Relations Review* 30/3 (1977): 325–341. Refutations include P. K. Edwards, *Strikes in the United States, 1881–1974* (New York: St. Martin's Press, 1981), ch. 3; Bruce E. Kaufman, "The Determinants of Strikes in the United States, 1900–1977," *Industrial and Labor Relations Review* 35/4 (1982): 473–90; Jack W. Skeels, "The Economic and Organizational Basis of Early United States Strikes, 1900–1948," *Industrial and Labor Relations Review* 35/4 (1982): 491–503. See also Edwards, "Strikes and Politics in

- the United States, 1900–1919,” in Leopold H. Haimson and Charles Tilly, editors, *Strikes, Wars, and Revolutions in an International Perspective: Strike Waves in the Late Nineteenth and Early Twentieth Centuries* (Cambridge: Cambridge University Press, and Paris: Editions de la Maison des Sciences de l’Homme, 1989); and Tilly, “Introduction” to Part IV: The Effects of Short-Term Variation, in the same volume.
65. Holly J. McCammon, “From Repressive Intervention to Integrative Prevention: The U.S. State’s Legal Management of Labor Militancy, 1881–1978,” *Social Forces* 71/3 (1993): 569–602.
 66. Albert Rees, “Industrial Conflict and Business Fluctuations,” *Journal of Political Economy* 60/5 (1952): 371–382; Orley Ashenfelter and George E. Johnson, “Bargaining Theory, Trade Unions, and Industrial Strike Activity,” *American Economic Review* 59/1 (1969): 35–49; Jean-Michel Cousineau and Robert Lacroix, “Imperfect Information and Strikes: An Analysis of the Canadian Experience, 1967–82,” *Industrial and Labor Relations Review*, 39/3 (1986): 377–387.
 67. David Snyder, “Early North American Strikes: A Reinterpretation,” *Industrial and Labor Relations Review* 30/3 (1977): 325–341.
 68. Friedman, *State-Making and Labor Movements*.
 69. For example, Frances Fox Piven and Richard A. Cloward, *Poor People’s Movements: Why They Succeed, How They Fail* (New York: Pantheon Books, 1977), ch. 3.
 70. Cf. Stanley Lieberson, *Making it Count: The Improvement of Social Research and Theory* (Berkeley: University of California Press, 1985), ch. 4.
 71. Federation of Organized Trade and Labor Unions of the United States and Canada, *Report of the Fourth Annual Session of the Federation . . . held in Chicago, Illinois, October 7, 8, 9 and 10, 1884* (1884), 11.
 72. Federation of Organized Trade and Labor Unions, *Report*, 14.
 73. This hypothesis was first proposed by Selig Perlman, “Upheaval and Reorganisation (Since 1876),” in John R. Commons et al., *History of Labour in the United States* (New York: Macmillan, 1918), vol. 2, pp. 370, 373. It has been repeated so often by historians and sociologists that it has the appearance of solid fact: for example Fink, *Workingmen’s Democracy*, xii–xiii; Philip S. Foner, *History of the Labor Movement in the United States*, vol. 2: *From the Founding of the American Federation of Labor to the Emergence of American Imperialism*, 2nd edition (New York: International Publishers, 1975), 53; Friedman, *State-Making and Labor Movements*, 46; Hirsch, *Urban Revolt*, 56; Kealey and Palmer, *Dreaming of What Might Be*, 75; Maury Klein, *Union Pacific: The Birth of a Railroad* (Garden City, N.Y.: Doubleday, 1987), 358; Oestreicher, *Solidarity and Fragmentation*, 117; Schneirov, 193; Voss, *Making of American Exceptionalism*, 75. Only when I looked for the evidence to prove this explanation thoroughly did I discover that it was a myth – as was pointed out long ago by Donald L. Kemmerer and Edward D. Wickersham, “Reasons for the Growth of the Knights of Labor in 1885–1886,” *Industrial and Labor Relations Review* 3/2 (1950): 213–220.
 74. *Journal of United Labor*, Sep. 1885, quoted in Kemmerer and Wickersham, “Reasons for the Growth of the Knights of Labor in 1885–1886,” 216. See also *John Swinton’s Paper*, Sep. 30, 1885.
 75. *Alarm*, Oct. 3, 1885.
 76. Shopmen working for connecting railroads naturally inspired and supported each other, on Gould’s various lines and on the Union Pacific Railway.
 77. See the column headed “Rumblings All Over,” *John Swinton’s Paper*, Jul. 19, 1885. The Saginaw strike would actually be a more plausible candidate for the role allotted by Perlman and Ware to the second Gould strike.

78. Paul Avrich, *The Haymarket Tragedy* (Princeton, N.J.: Princeton University Press 1984); Hirsch, *Urban Revolt*; Bruce C. Nelson, *Beyond the Martyrs: A Social History of Chicago's Anarchists, 1878–1900* (New Brunswick and London: Rutgers University Press, 1988); Schneirov, *Labor and Urban Politics*.
79. Knights of Labor, General Assembly, *Proceedings*, 1879 (ii), 114; 1880, 202f.; 1881, 333; 1882, 383; 1883, 528; 1884, 796; 1885, 173; 1886, 326.
80. Knights of Labor, District Assembly 24, "Record of D.A. 24" (minutes, June 7, 1882 to April 16, 1886), George A. Schilling Collection, Illinois State Historical Library, Springfield, Jan. 15, 1886, 229.
81. Illinois Bureau of Labor Statistics, *Fourth Biennial Report* (Springfield: H. W. Rokker, 1886), table i, 172–178, and table ii, 187.
82. These numbers do not add up because about 2,700 trade unionists were also Knights. The figure for duplicate memberships excludes three trade unions that were in the midst of becoming Local Assemblies; they reported that *all* their members belonged to the Knights of Labor.
83. Illinois Bureau of Labor Statistics, *Fourth Biennial Report*, 191.
84. George A. Schilling, "History of the Labor Movement in Chicago," in *Life of Albert E. Parsons with Brief History of the Labor Movement in America* (Chicago: Mrs Lucy E. Parsons, 1889), xxiii.
85. *Tribune*, Dec. 7, 1885, 8.
86. *Tribune*, Dec. 28, 1885, 8.
87. *Tribune*, Feb. 8, 8. (Unless otherwise indicated, newspaper citations refer to 1886.)
88. James Brennock, Testimony (March 31, 1900), in *Report of the Industrial Commission on the Chicago Labor Disputes of 1900, with Especial Reference to the Disputes in the Building and Machinery Trades* (Washington, D.C.: Government Printing Office, 1901), 465.
89. Martin Irons, "My Experiences in the Labor Movement," *Lippincott's Monthly Magazine*, 37 (1886): 626.
90. Fink, "The New Labor History and the Powers of Historical Pessimism."
91. *Vorbote*, Mar. 17, 8.
92. *Tribune*, Mar. 22, 3.
93. *Tribune*, Apr. 20, 2.
94. *Tribune*, Apr. 26, 2.
95. United States Department of Interior, Census Office, *Report on Population of the United States at the Eleventh Census, 1890* (Washington, D.C.: Government Printing Office, 1897), part II, table 118, 650.
96. Illinois Bureau of Labor Statistics, *Fourth Biennial Report*, table xv, 257–71, 274–281.
97. Unfortunately, the tabulation for the Knights of Labor makes it difficult to match workers with a specific Local Assembly. This affects 26 Assemblies. In addition, three trade unions must be omitted because workers received board as well as wages. Wages are inferred for two unions using the wages of Knights in the same occupation.
98. Testing for the difference between two means (without assuming equal variance), the p-value is .007 (n = 56, 85) – excluding organizations of clerks. If those are included, the p-value is .024 (n = 60, 86).
99. *Tribune*, Apr. 20, 2.
100. Illinois Bureau of Labor Statistics, *Fourth Biennial Report*, table 2, 482–490.
101. *Tribune*, Mar. 27, 3.
102. *Tribune*, Mar. 30, 1.

103. *Tribune*, Apr. 16, 2.
104. *Tribune*, Apr. 19, 2.
105. *Tribune*, Apr. 30, 1.
106. Estimated from *Bradstreet's: A Journal of Trade, Finance, and Public Economy*, May 8, 290; May 15, 306.
107. *Vorbote*, June 8, 1887, 5.
108. *Tribune*, May 1, 1; May 2, 9.
109. Kenneth Andrews and Michael Biggs, "The Dynamics of Protest Diffusion: The 1960 Sit-in Movement in the American South" (presented at the meeting of the American Sociological Association, 2002); McAdam and Sewell, "It's about Time"; Oberschall, "The 1960s Sit-ins."
110. By itself, of course, this is not sufficient to explain the popular upsurge that toppled Communism; e.g. Kuran, *Private Truths, Public Lies*, ch. 16.
111. Hedström, Sandell, and Stern, "Mesolevel Networks"; Doug McAdam and Dieter Rucht, "The Cross-National Diffusion of Movement Ideas," *Annals of the American Academy of Political and Social Sciences* 528 (1993): 56–74.
112. Marshall Ganz, "Resources and Resourcefulness: Strategic Capacity in the Unionization of California Agriculture, 1959–1966," *American Journal of Sociology* 105/4 (2000): 1003–1062.
113. A point made by Robert A. Nisbet, *Social Change and History: Aspects of the Western Theory of Development* (New York: Oxford University Press, 1969).
114. United States Commissioner of Labor, *Twenty-first Annual Report: Strikes and Lockouts*, 1906 (Washington, D.C.: Government Printing Office, 1907), table iv, 478–479, and table xvi, 736–737; John I. Griffin, *Strikes: A Study in Quantitative Economics* (New York: Columbia University Press; London: P. S. King and Son, 1939), table ii, 43–44; Florence Peterson, *Strikes in the United States, 1880–1936* (United States Department of Labor, Bulletin, no. 651, 1937), table 1, 21.
115. Stanley Lebergott, *Manpower in Economic Growth: The American Record since 1800* (New York: McGraw-Hill, 1964), table A-1, 510.
116. Lebergott, *Manpower in Economic Growth*, table A-17, 524, table A-19, 528.
117. Lebergott, *Manpower in Economic Growth*, table A-17, 524, table A-19, 528.
118. United States Bureau of the Census, *The Statistical History of the United States: From Colonial Times to the Present* (New York: Basic Books, 1976), vol. 2, series Y204–5, 1083.
119. U.S. Bureau of the Census, *Statistical History of the United States*, vol. 2, series Y83, 1073.
120. Lebergott, *Manpower in Economic Growth*, table A-3, 512, table A-15, 522.
121. Jeffrey G. Williamson, *Late Nineteenth-Century American Development: A General Equilibrium History* (London and New York: Cambridge University Press, 1974), appendix C.3, 302–304.
122. Edwin Frickey, *Production in the United States, 1860–1914* (Cambridge: Harvard University Press, 1947), table 6, 54; Milton Friedman and Anna J. Schwartz, *Monetary Trends in the United States and the United Kingdom: Their Relation to Income, Prices, and Interest Rates, 1867–1975* (Chicago and London: University of Chicago Press, 1982), table 4.8, 122–127; U.S. Bureau of the Census, *Statistical History of the United States*, vol. 2, series V23, 912–913.