

NBER WORKING PAPER SERIES

HELPING WORKERS ONLINE AND OFFLINE:
INNOVATIONS IN UNION AND WORKER ORGANIZATION USING THE INTERNET

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Working Paper 13850
<http://www.nber.org/papers/w13850>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
March 2008

We are grateful to Paul Nowak and John Wood of the TUC for their helping us obtain data and carrying out the survey of www.unionreps.org.uk. Our discussion of Working America benefited from the Harvard University Labor and Worklife Program Workshop on Working America, Nov 13-14, 2007 and in particular from the presentation by Robert Fox on the organizations on-line activities. Jason Abaluck, Rishi Patel, Morgan Freeman, and David Owen provided excellent research assistance. Peter Cappelli and David Autor gave valuable comments. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 13850

March 2008

JEL No. J0,J3,J40,J5,J51,J52,J81,J83

ABSTRACT

This study examines two innovative efforts to provide union services to workers with the aid of low cost Internet communication: the AFL-CIO's Working America, a "community affiliate" that enrolled 2 million workers from 2004 to 2007 by canvassing them at their homes and over the Internet (www.workingamerica.org); and the UK'S Trade Union Congress's www.unionreps.org.uk, a discussion board for worker representatives to communicate about workplace issues. Working America demonstrates that workers without collective bargaining will join a union organization that communicates on-line and off-line and campaigns for worker interests in society. Unionreps.org shows that local worker representatives can form an on-line community that shares information to improve the services they give workers. Combining the two innovations could be a step toward a new "open source" union form that provides union services at low cost outside of collective bargaining.

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Trade unions have been the major labor market intermediary for workers in market economies. Unions provide workers with information about the workplace and job market, represent workers in work-related grievances, and are workers' voice in dealing with collective goods at the workplace. In addition, unions are the key labor market intermediary that monitors business compliance with labor laws and regulations and that lobbies on behalf of workers. Historically unions have depended on collective bargaining with employers to improve compensation and workplace conditions and have financed their activities with dues from members in collective bargaining sites.

In the US the role of unions as providers of services to workers has diminished as union density and collective bargaining coverage have shrunk. Despite survey evidence that large and increasing proportions of non-unionized workers desire union representation (Freeman and Rogers, 2006) the number of workers in unions has fallen relative to the number of wage and salary workers in the private sector. Labor and community activists, non-governmental organizations, and firms' own human resource departments have tried to provide some of the services that unions historically delivered to workers, with limited success (Freeman, Hersch and Mishel, 2005).

In the UK, union density has stabilized at higher rates than in the US but the range of issues subject to collective bargaining has narrowed and union ability to affect outcomes has weakened. With unions helping workers only modestly through collective bargaining, an increasing proportion of workers in organized workplaces free ride on unions while those in firms without a recognized union show no great desire for unionization.

Can unions in the US and UK (and in other countries where unions face problems) resurrect their role in delivering services to workers or is unionism headed for obsolescence?

Some analysts argue that unions must make innovative use of the Internet and other computer-related technologies to resurrect their role (Shostak, 1999, Darlington, 2002, Freeman and Rogers,

2002a, Diamond and Freeman, 2002). In these analyses, modern information-communication technology gives unions a tool to revolutionize the way they provide services to workers and allow them to reinvent their role in market capitalism. Freeman and Rogers (2002a), in particular, claim that the Internet creates the opportunity for unions to develop a new union form, labeled open source (OS) unionism, which operates over the Internet and in communities as well as at work sites.

Columns 1 and 2 of table 1 provide a capsule summary of the differences between the OS form and traditional unionism. The OS union enlists members and delivers services on-line. It uses its web site as a virtual union hall to offer expert information on workplace issues and to establish a place for members to exchange views on work-related issues. Rather than having a one size fits all membership structure, the OS union charges members differently depending on the services they obtain. Freeman and Rogers argue that because OS unions will have less power at workplaces than unions whose main efforts go into collective bargaining, “Open source unions would not be able to turn inward when they faced struggle, but would have to look outward. They would be pressured to develop a more coherent and attractive public face and become a more visible source of stewardship and moral value in the broader economy. Open source unions would gain the political clout and social influence that would come of its playing a broader public role.” (Freeman and Rogers, 2002a, p 22-23).

What tools would an OS union have to pressure an employer? Absent bargaining clout and the potential for workplace actions such as strikes, it would use on-line and area-based off-line activities to pressure employees. The experience of www.greedyassociates.com, a website for young attorneys whose main feature is a message board about employment opportunities, shows how effective on-line pressures can be. When in the late 1990s major law firms paid newly hired associates more in Silicon Valley than elsewhere, complaints from associates working elsewhere forced the firms to raise pay in New York and other major cities, for fear that bad publicity would reduce their chances of recruiting top

law students in the future. Taras and Gesser (2003) view the message boards as potentially “the beginning of a new area of Internet organization marked by effortless and instant dissemination of information between similarly situated employees” – a virtual union hall, but argue that this ... “is not a union. It is something else.” They speculate that other nonunion workers such as bank tellers, software designers and lab technicians, especially those who like lawyers, find themselves in high demand” could benefit from a similar site (Taras and Gesser, pp 26-27).

The 2002 success of the AFL-CIO in gaining severance pay for the non-union workers who lost their jobs at Enron provides another example. The AFL-CIO combined a website on the plight of these workers (<http://www.aflcio.org/enron/connections.htm>) and an email campaign using its Family Network data base to bombard creditor committees and Enron executives with faxes, telephone calls, and emails on their behalf with off-line activity in the form of legal action and campaigns against Enron directors that eventually won the workers 32 million dollars.

Whether unions can create a viable worker-based organization outside of collective bargaining and carry out campaigns like these regularly is unclear. Simply adopting Internet and related technologies, as many unions have done (Diamond and Freeman, 2002; Freeman, 2005; Newman, 2005; Stevens and Greer, 2005) is not sufficient. For a new union form to succeed it has to find packages of services for workers outside of collective bargaining at the costs that workers will pay; outperform competitor suppliers of those services; and overcome employer and anti-union consultant use of online as well as offline access to workers.

The history of the Knights of Labor, who organized huge numbers of workers outside of collective bargaining in the US in the 1880s, is a warning from labor history that non-collective bargaining organizations can prove unstable. Between 1885 and 1886, the Knights grew from about 100,000 members to 700,000 members by admitting all workers (except for lawyers, bankers, liquor

dealers, and gamblers) regardless of whether the workers were part of an organization that attained a collective contract. Some chapters of the Knights bargained collectively but the Knights grew as a social movement. Faced with employer pressure, however, the Knights lost membership in the late 1880s and were defunct by the end of the century (Voss, 1993; Weir, 1996). The lesson that Samuel Gompers and other founders of the American Federation of Labor drew from the Knights' experience was that business unionism, in which skilled craft workers gain collective bargaining contracts with employers, was the sole viable union form. The industrial unionism of the 1930s and 1940s seemed to confirm the view that unionism was essentially synonymous with collective bargaining contracts with employers.

This study examines two union innovations in the US and UK that challenge this orthodoxy in different ways:¹ Working America (WA), the AFL-CIO's "community affiliate" that enrolls members by canvassing them at their homes and over the Internet (www.workingamerica.org); and www.unionreps.org.uk, the Trade Union Congress's discussion board for worker representatives that enables representatives to communicate about workplace issues without dealing with union staff or employers. It considers whether combining these and other innovations could produce an open source union form that would prosper in the Internet era and avoid the fate of the Knights.

1. Working America

The problem facing US unionism is that private sector union density and collective bargaining coverage has been falling fairly steadily. In 2007 7.5% of private sector wage and salary workers and 12.1% of all wage and salary workers were union members (<http://www.bls.gov/news.release/union2.nr0.htm>), which put private sector density thirteen percentage points below the density in 1980 and put overall density 10.5 points lower than in 1980. Density did,

¹ Freeman 2005 describes other ways unions have used the Internet.

however, roughly stabilize between 2006 and 2007, suggesting that greater allocation of resources to organizing that the AFL-CIO encouraged among its affiliates and the formation of the Change-to-Win coalition (<http://www.changetowin.org/>) may have helped arrest the downward trend in unionization.

The trend in union density does not reflect workers' loss of interest in union services. To the contrary, public opinion surveys show that over half of US non managerial nonunion workers wanted trade unions to represent them in dealing with employers in the mid-2000s – an increase over the 40 or so percent of nonunion workers who said they wanted unions in the 1990s and the 30 or so percent who so reported in the 1980s. An even larger proportion of workers -- upwards of three quarters – say that they want some workplace organization exclusive of a collective bargaining union to represent them to their employer (Freeman and Rogers, 2006, chapter 1).

The adversarial nature of organizing contests has contributed to the erosion of US union density. Unionization drives are typically hard-fought battles that pit workers who desire to unionize against managements who do not want unions because union-induced increases in compensation reduce profits and union work rules limit managers' power at workplaces. Firms typically spend large sums of money in organizing campaigns. Many firms engage in questionable or illegal actions to deter workers efforts to unionize.

For readers unfamiliar with tactics employed to counter union organizing campaigns, an example may be worth more than a host of statistics. The 2007 independent arbitrator's report on Yale University Hospital's efforts to thwart an organizing drive is illustrative. The Hospital agreed with the City of New Haven and the Service Employees International Union to remain neutral in the campaign. However, the arbitrator found that, the agreement notwithstanding, the Hospital and its labor relation consultant broke federal labor law, violated its own agreement, and regularly lied to subvert the election process (Kern, 2007). Finding that the company's actions made it impossible for workers to choose to unionize in an

election setting, she ordered Yale Hospital to pay 2.3 million dollars to the union for its organizing expenses and to pay 2.2 million dollars to workers – the amount the Hospital had spent on the consultants fighting worker efforts to organize -- on the grounds that this represented the minimal amount the employer thought workers might have gained from unionization.²

American Unions have pursued three strategies to counter their eroding density and management opposition to unions that engage in collective bargaining.

First, unions have pressed Congress to enact laws to restrict management's ability to contest organizing efforts and avoid collective agreement when unions gain majority status. The mid-2000s vehicle for this is the Employee Free Choice Act (EFCA) (<http://araw.org/takeaction/efca/index.cfm>). This regulation requires that firms recognize a union when a majority of workers sign cards for the union. Card check removes the option for management to campaign against the union in a National Labor Relations Board election and lowers the length and cost of organizing campaigns. EFCA also requires firms and unions to seek first contract mediation and arbitration when they cannot reach a contract with a newly formed union. Finally, the proposed law raises the penalties on employers for unfair labor practices against workers seeking to unionize.

Second, unions have sought recognition from employers outside the framework of the National Labor Relations Act's electoral process. They pressure management to be neutral in organizing campaigns. Unions with collective bargaining contracts bargain that the firm remain neutral in

² US labor law also makes it difficult for non-collective bargaining institutions to operate at the workplace. Section 8a2 of the Taft-Hartley Act makes it illegal for firms to set up or help workers set up non-union groups within an enterprise to confer with management over issues relating to worker concerns for fear that such groups would be "company unions." In principle, labor law protects minority unionism as much (or as little) as majority unionism but unions have generally eschewed providing services to groups who can obtain only minority union status on the grounds that without collective bargaining they could not raise sufficient dues to pay for the services.

organizing drives in other plants. The successes from these activities have been too limited to affect the trend decline in union density.

Third is the strategy that we study: organizing workers outside of collective bargaining. Some unions -- teachers, firefighters, and police in some states in the public sector-- have organized locals for workers even though state law does not allow for collective bargaining. These unions lobby legislatures and other government officials on behalf of members. In the private sector, the Communication Workers (Nack and Tarlau, 2005) has a local in IBM (www.allianceibm.org), even though it has little chance of gaining a collective contract, and has locals for other workers in the IT sector. These unions use the Internet to connect to members and marshal information and publicity. But the biggest and arguably most successful effort to sign up workers outside of collective bargaining is the AFL-CIO's Working America.

What is Working America?

The AFL-CIO describes Working America (WA) as a membership-based "community affiliate" for the millions of workers who say they want unions but cannot get union recognition at their workplace. WA canvasses people in their homes and over the Internet to join the affiliate, so that the employer has no power to affect their decision. In summer 2004, WA hired staff in ten cities in five states to recruit members in urban neighborhoods with many union members on the notion that people in those areas would have favorable views of unions (Greenhouse, 2004). In contrast to the associate membership schemes that AFL-CIO affiliates tried in the 1980s and 1990s to attract workers for whom they could not gain collective contracts, WA stresses participation in a social movement as the prime reason to join. To avoid any conflict with affiliate unions, it only enrolls persons who are not otherwise members of a union. In addition to communicating with members through telephone calls and mailings, WA uses its website (www.workingamerica.org) to connect with workers and emails members

regularly. It conducts Internet polls of preferences to ascertain the issues on which members want it to campaign and organizes on-line actions that ask members to email Congress or other decision-makers on particular issues and to pass messages to others, and organizes off-line activities where it asks members to contact decision-makers as well. It has an active get-out-the-vote drive.

The leadership of WA are AFL-CIO staffers. In this respect WA resembles an NGO rather than a union whose members elect their leadership. Perhaps the closest comparable organization is American Association for Retired Persons, which has established itself as a key group in issues relating to retirees, enlisting millions of members at low dues (\$12.50 for a person and their spouse in 2007) and raising most of its budget in other ways.

When WA first sent canvassers to ask workers to join a non-collective bargaining union affiliate, the organization was uncertain of the response they would get. The survey data that showed a latent demand for unionism did not ask about a non-workplace based union affiliate with the attributes of Working America. Perhaps workers wanted collective bargaining or nothing at all and would reject a non-workplace based organization. Perhaps their responses to hypothetical questions on unionism would prove to be a bad indicator of future behavior (McClennan 2007).

The responses to the canvassing effort were striking. Two-thirds of the people WA contacted joined the organization. By fall 2004 WA had 400,000 members. In 2007 it had 2,000,000 members, making it one of the fastest growing groups in US labor history. Targeting urban areas in likely swing states in national politics, WA amassed 700,000 members in Ohio, over one quarter of a million in Pennsylvania, and over 90,000 in Kentucky, Virginia, Minnesota and Michigan. It also obtained sizable numbers in Florida, Missouri, Washington, Oregon, among other states. Some 89 percent of participants give phone numbers so they could be contacted, and one-third provided e-mail addresses, an increase over the proportion who provided e-mails to canvassers in the past. As of mid-2007 it had 250-

300 organizers making approximately 250,000 contacts per month. At its 2/3rds success rate, this could translate into 170,000 new members per month or about 2 million recruits per year. Additionally, the organization recruited 135,000 members through online efforts, giving it members in New York, California, Massachusetts and other states where it did not canvas people in their homes.

Given the geographic mobility of Americans and changes in interest, some WA members invariably lose their connection to the organization over time, producing a natural rate of depreciation in the stock of members. This means that to maintain a constant stock the organization must continually recruit new members. We do not have adequate data to estimate of the rate of depreciation, which likely varies across areas, demographic groups, and with the method of recruitment, political events and the business cycle. But with WA making roughly 3 million contacts at the door in 2007-2008, membership will continue to grow at any plausible depreciation rate. The estimated cost of signing up new members is about \$8.00 per member, which compares to the \$2,000 or so that it costs a union to obtain a new member in collective bargaining (Freeman, 2004). At this writing WA does not require that its members pay dues. Rather, it relies on outside funding, mostly from the AFL-CIO, for its budget. It also asks for voluntary contributions of \$25, which it has obtained from about 10% of new members.

Who joins Working America?

Table 2 shows that the demographics of WA's membership closely mimics the demographics of the US population: 37% of members have at least a 2 year college degree, 41% say that they attend church at least weekly, about one-third report themselves as "born again", and one in three own a gun or support the National Rifle Association. Most members describe themselves as moderate and conservative, and about half say they are neither strong Democrats nor Republicans. With its limited budget, WA needs an "activist" core of members to volunteer to take action on its behalf. As a way to identify potential activists, WA canvassers ask new members to write to their Congressperson or some

other official about an issue that matters to them and promise to pick up and mail the letter later that day. Approximately 20-25 percent of new members undertake this action. In 2007 WA asked the members that had provided email addresses (approximately 263,000 at mid-year) to undertake on-line activities, such as sending email protests to public officials or sending email messages to friends or relatives about the issue. Members who joined online were more active and committed than those who joined through the canvass and provided their email: although just 18% of WA's email database comes from those who joined on the Internet, those persons accounted for 60% of the online advocacy actions. To see whether on-line activists would assist WA outside of cyberspace, four field offices asked the on-line activists in their area to attend meetings on local issues and found that about 80% did so.

What does Working America do?

WA's website offers members and others who join in its campaigns involvement in a social movement that it markets as having "the priorities that matter most to working people... (and that can) ... make a difference for your community, for America and for your working family." While from Mancur Olson (1965) on, economists have stressed the need for some personal incentives to get people involved in organizations, studies of volunteering and charitable activity suggest that by itself the "warm glow" of participation (Andreoni, 1990) can motivate behavior. Behavioral and neuro-economics demonstrate that concern for fairness is deeply rooted in the human psyche (Kahneman Knetsch, and Thaler, 1986). Experiments show that consumers are willing to pay more for goods made under good labor practices (Hickox and Smyth, 2006). WA canvassers report that people say that they join at the doorstep because they believe that being part of a group gives them influence in local or national policies that they would never have as individuals.

WA also offers considerable information to workers on its website on such issues health care benefits, the sub-prime mortgage crisis, and rights at work. Exhibit 1 illustrates four features of the Web

site. “Ask a Lawyer” uses volunteer lawyers from unions or associated law firms to answer questions about legal issues that arise at workplaces. In 2007 visitors to the web site asked over 200 questions per month, with most of the questions coming from persons new to WA. The site also solicits information from its members. WA’s most popular feature in 2007 was a contest called “My Bad Boss” where people reported on horrid work situations. It is unclear whether reading these stories made the typical worker feel better about their situation or added to the desire to seek some workplace organization. The “Health Care Hustle” was a similar feature focused on problems with healthcare. “Word on the Street” is a blog where canvassers report their experiences. Members of Working America get access to benefits through the AFL-CIO and its [Union Plus programs](#). The benefits include health care via [Union Plus Health Savings](#); a half hour of free legal advice and reduced fees from participating lawyers ([Union Plus Legal Service](#)); and an inexpensive Mastercard ([Working America credit card](#)). But these are treated as minor add-ons rather than selling points of membership.

Membership gives persons the right to vote on the website for the issues of greatest importance to them. In 2007 about 40,000 members voted that health care was the number one issue for which they wanted the organization to campaign. Local chapters have lobbied for minimum wages in Oregon and Pennsylvania, funding for health care in Seattle and for school spending in other areas. The focus of WA on societal issues rather than problems at particular firms has led WA to assess its success in part by the extent to which its members turn out in elections and vote for candidates favored by the AFL-CIO. WA’s internal assessments suggest that the organization succeeds in doing this to a similar extent as collective bargaining unions do for their members.³

³ These assessments fall short of an ideal methodology for testing the effects of WA on voting. They do not, for instance, compare the voting of WA members to that of people with similar initial views in the same area or to that of persons with similar views in areas that do not have WA chapters.

While WA is the largest US union innovation that operates outside of collective bargaining, it falls short of the Open Source model in several ways. It does not offer members assistance in dealing with their employer. In fact, while the organization asks members about their industry and occupation, it does not ask for their place of employment. It does not offer a forum for discussion among members that might help create leadership from among members and bottom-up activity. Working America's Washington-based leadership determines its activities, which makes it more like a non-government organization such as AARP than a member driven union.

Can WA maintain/increase membership and achieve financial independence if it remains focused on broad social issues and political action?

There is historic precedence and arguments on both sides of this question. The collapse of the Knights of Labor shows that labor organizations that are primarily social movements can decline quickly under pressure. The success of the AARP shows that an organization that charges minimal dues and lobbies on behalf of retired workers is viable in the US. Models of group formation in which persons join through momentum because their neighbors join show that such organizations are less stable than organizations in which persons join solely for personal gain (Centola, 2007). To the extent that WA's spurt in membership benefited from two-terms of a Republican Presidential administration aligned with business, the election of an administration more attuned to workers interests could dampen the desire for WA since government would be undertaking desired actions in any case. On the other hand, a favourable national government might increase desire to participate in the organization. We suspect that the organization will eventually have to find ways to support workers at their place of employment to become a viable form. With a large membership in different parts of the country, WA has the potential to experiment with alternative ways to do this and find the best mix of services and dues for its survival.

2. www.unionreps.org.uk.

British unions face a different problem than US unions. Union density in the UK fell in the 1980s and 1990s, then stabilized in the 2000s at about 29% of the work force. In 2006 private sector unionism was 18% – two and half times the density in the US. UK employers do not fight vehemently against unionism, presumably because collective bargaining does not cost firms much – the estimated union wage premium is close to zero (Blanchflower, D.G. and Bryson, A., 2004) and government funded national health care removes one of the major cost items associated with collective bargaining in the US. The challenge for unions in the UK is to attract workers without a sizeable union premium rather than to circumvent employer opposition. About 40% of workers in workplaces with collective bargaining see no need to join the organization. Unions have modest budgets and staffs and rely on voluntary workers or union representatives to deliver services at the workplace and to sign up new workers as well. Voluntary union representatives at work sites are the face of unions to most workers. Reps work a median of 2 to 5 hours per week with their employer typically paying for the time they spend as reps at the workplace but not paying for time spent outside the workplace. Providing services through volunteers limits the amount of direct control that the unions have over the quality and types of services provided. Reps spend much of their time on health and safety issues and in dealing with employee problems with the way management treats workers, and smaller amounts of time making sure workers are paid the wages and benefits in the contract, and protecting the security of employment (see Appendix A).

Pondering the problem of UK unions enrolling members at organized work sites, Darlington (2001) and Diamond and Freeman (2002) argue that unions need to improve and personalize their services to members. One plausible way to improve services is to raise the knowledge and skills of union reps. The greater the tenure and intensity of reps' efforts, the less costly is the union investment in

their knowledge and skills relative to the services delivered. In the OS model, unions would use the Internet to give greater services to dues payers in organized sites and less service to visitors at union web sites. Our UK innovation www.unionreps.org.uk is designed to harness the knowledge of the voluntary reps to improve services to workers at low cost to union staff.

What is unionreps.org?

It is a website restricted to unique representatives who receive a unique password when they sign up that seeks to create an online community for them to discuss issues that arise as part of their representative duties. The Trade Unions Congress launched unionreps.org in 2003. In February 2006, the site had 8,400 subscribers – 3.4% of the approximately 250,000 representatives in the UK – and had 16,818 hits per month. The users come from a range of unions, industries, and geographic regions that is representative of the UK union movement.⁴

The main feature of the site is a set of topical bulletin boards on which reps pose questions that other representatives can answer. In principle, this harnesses the collective wisdom of union reps to deal with workplace problems (Surowiecki). By enabling all representatives to benefit from questions and answers between two or more reps and providing an archive of previous questions and answers, the site harnesses economies of scale in its provision of information. It permits asynchronous communication since users can post questions and answers whenever they have time. The site also provides resources directly to the reps; sends a weekly newsletter to subscribers to inform them of the latest TUC news, events and training opportunities; contains links to union related news stories and to other websites and materials that may be of use to reps. It polls reps' about such things as the usefulness of on-line training.

⁴Forty-seven percent are in the public sector, 36% worked in industry, and 17% from the service sector. By comparison 57% of union members are in the public sector, 23% in industry, and 19% in service sector jobs. Thirty-five percent of unionreps.org users live in the Southern/Eastern region, 12% in Scotland, and 9% live in Wales. These figures compare to 35% of union members residing in the Southern/Eastern region, 10% in Scotland, and 6% in Wales. DTI, Employment Market Analysis and Research, April 2005, Trade Union Membership 2004., tables 3, 7, 27

Because content on the site comes mainly from the voluntary efforts of reps, the site requires limited maintenance by TUC staff and costs little to run.

The TUC site resembles peer-to-peer Internet information sharing sites, such as the gnutella network for sharing music, where 70% of members free ride and small groups provide the bulk of the material (Adar and Huberman, 2000), usenet news groups, where anonymous users post information and answer questions (Resnick, et al). Because such sites can be destroyed by maliciously given or erroneous information, their success requires that the vast majority of users act in a trustworthy way. This has produced an extensive information sciences and sociology literature on trust and online cooperation in virtual communities (Rheingold, 1993; Kollak, 1999; Jones, Ravid, Rafaeli 2004, Bishop, 2007). [Www.unionreps.org.uk](http://www.unionreps.org.uk) has some advantages in this respect over other information-sharing web sites. Only genuine reps using their regular union emails and full names have access to the sites. Moreover, the union community is a connected world, so that these worker reps may encounter each other (or common acquaintances) in the union hall or at union conferences. Individuals can build reputations for giving accurate responses and their on-line actions can follow them into the off-line world.

How does www.unionreps.org.uk work?

To answer this question and find out whether the site helped union reps deal with workplace issues, raised their morale, and created an on-line community of union activists, working with the TUC staffers who developed the site, we gathered three types of data on potential and actual users.

First, we surveyed two types of union reps: reps undergoing TUC training between November 2003 and April 2004,⁵ who were introduced to the site and encouraged to use it (herein the TUC training

⁵ To improve the skills of workplace representatives, the TUC runs short training sessions around the country. Each year some 37,000 reps – or 15% of the total – are involved in a TUC training program. Our sample of trainees comes from two sources: In Fall 2003 instructors at TUC training centers gave surveys to the worker

sample); and on-line union reps who used the website independent of TUC training. We obtained 857 usable responses from the training sample and 411 usable responses from the on-line sample, which gave us the largest sample of union reps in the UK.

Second, we created a data set that follows *postings* that reps placed on the web site from June to December 2003. At the time of our study unionreps.org.uk had five bulletin boards: education, equality, health and safety, law and representation, and organisation and recruitment.⁶ Figure 2 shows the distribution of postings across the areas. We took all postings from the bulletin board save for the health and safety area. We categorized the questions and responses by the individual who posted the comment, the time it was posted, and the thread (query) to which it belonged. This meant that we coded the data as X_{fit} , where X is a variable reflecting the content of the question or response, f identifies the thread to which it belongs; i relates to the person making the posting; t is the time of the response. The X variables included the content of the query/response, whether it gave or asked for off-site contact, whether it referred to official data (from the union or the government), its relevance to the initial question, and so on. We use these data to analyze the dynamics of the on-line discussion.

Third, we conducted a longitudinal survey of persons in our initial cross-section survey. This follow-up survey was conducted in 2005-2006. We obtained 266 responses from the group who received TUC training and 129 responses from the group of reps who were initially users of the site. This enable us to examine whether the trainees who were introduced to the site as part of their training used the site in the future and whether use of the site influenced users over time.

When we began the research, it was debatable over whether the typical union reps was “Internet ready” to make a website part of their representative activities. As table 3 shows, we found that most

representatives who passed through the centers; additionally, the TUC mailed copies of the survey directly to 1,000 previous TUC worker representative training participants.

⁶ In November 2004 the TUC added a pensions bulletin board to www.unionreps.org.uk.

representatives were so ready: 45% of reps surveyed at TUC training centers reported using the Internet daily; another 21% said they used it at least twice a week. Most had access to the Internet at home. The table also shows that subscribers to unionreps.org use the Internet more frequently. There was little difference in use of the Internet between men and women, and across age groups.⁷ Most important, many union reps report that they used the Internet in the course of their representative duties for a wide spectrum of activities.

The sample of subscribers made greater use of the Internet for representative duties than did the TUC trainees others, but even the trainees (who had not yet been introduced to the site) used the Internet regularly for their representative duties – indeed, more so than for other union activity or on their jobs. Both groups used the Internet to learn about employment regulations and training opportunities, to communicate with the workers they represent, with other worker representatives, and with union officials. Given these rates of Internet access and usage it is clear that a web-based resource can reach most union representatives.⁸ Indicative of how users view the site, over three quarters of those in our online survey report that they recommended the site to a friend. This plus the growing number of subscribers to the site suggest that many users find the site valuable.

What does analysis of threads tell us?

The bulletin board at unionreps.org depends on questions posed by union reps, who post their question because they expect someone else on the site can help answer it in a reasonable time period. Whether this in fact occurs should depend on the number of persons on the site who could answer the question relative to the number of other questions on the site. The more persons on the site, the greater

⁷ Those aged 60 and older are slightly less likely to use the Internet daily, but even 75% of those aged 60 and older report using the Internet more than once a week.

⁸ In the US this could be more complicated. The NLRB's December 2007 ruling that firms in the United States may prohibit workers from using their work email systems to send union-related emails could complicate efforts to use email to reach those who mainly use the Internet at work.

will be the chance of getting a useful response and the higher the value of posting a question.

Contrarily, if the site is loaded with questions and few people to provide answers, the chance of getting an answer is likely to be small, which should discourage reps from posting their problem. A simple difference equation captures this relation. Let Q_t = the number of new questions on the site in time t ; R_{t-1} be the number of responses to questions in the previous period; and Q_{t-1} be the number of questions in the previous period, Q_{t-1} . Then we have a supply of questions equation:

$$(1) Q_t = f(R_{t-1}, Q_{t-1}) \text{ with partial derivatives } f_1 > 0, f_2 < 0, f_{11} < 0, f_{22} > 0.$$

From the threads on the site for 2004, we calculated the number of new questions in our sample per month – the arrival rate of questions -- at approximately 100 per month.

Replies to question are the other side of the market for threads. Assuming that subscribers arrive and check questions on the site randomly, we hypothesize that the decision to answer a question depends on the number of questions on the site, the individuals' expertise, and their assessment of whether someone else might answer the question, which depends on the number of replies on the site. While it is possible that subscribers could compete over replies, which would generate lots of replies, we expect that free riding behavior will create a negative feedback so that persons are less likely to answer if they believe many other reps will do so (letting Nigel answer the posts). Formally, we write the number of replies to questions in period t , R_t , depends positively on the number of questions in the previous period and negatively on the number responses in the previous period, R_{t-1} :

$$(2) R_t = g(Q_{t-1}, R_{t-1}) \text{ with partial derivatives } g_1 > 0, g_2 < 0, g_{11} < 0, g_{22} > 0.$$

In this equation replies fall when there are many replies, consistent with the finding by Jones, Ravid, and Rafaeli (2004) that persons on usenet sites tend to end active participation when mass interaction increases.

To examine the supply of replies in our sample, we tabulated the distribution of responses to threads. Column 1 of Table 4 shows that just 11% of the questions received no answers. On average a question obtained 3.1 responses though the average masks the fact that there is considerable dispersion in the number of responses per answer. Over 12% of threads received more than five responses and one obtained 36 replies. This distribution differs greatly from what one would expect if responses were randomly assigned to questions. Column 2 gives the distribution of **all** threads on the site in 2004. In the population, 12% of threads received no answers, essentially the same rate as in our sample. The general shape of the distribution of responses per thread is similar. The average number of responses per question was 3.5 and 15% of threads generated more than 5 responses.

The timing of replies to questions is important. If a posted question does not get a reply quickly, representatives are likely to be discouraged from posting questions. Fast responses should increase the number of questions. In our data the median number of days before a first response was one day: 35% of questions received a response the same day it was posted, and 22% received a response by the next day. Nearly 2/3rds of all questions received a response within two days, and over 80% within a week.

To see if the responses helped resolve the issue that the question raised, we read all of the responses and coded them as to whether they “moved the thread toward answering the initial post”. Table 5 shows that three quarters of the responses did that. One-quarter did not. The one-quarter of responses that did not move toward answering the initial post were often at the end of a thread, suggesting that the thread drifted off target as persons responded to previous responses as opposed to the initial inquiry. Such patterns have been found in the “telephone” game, where people repeat a message along a line, inadvertently altering it ([http://en.wikipedia.org/wiki/Telephone_\(game\)](http://en.wikipedia.org/wiki/Telephone_(game))). To verify this interpretation, we regressed the percentage of responses that help move the question along on the position of the response in the thread (#2 being the first response to the question, #3 for the next

response, and so on). The regression gave a statistically significant coefficient of -0.028^9 on the number of the response, indicating that the proportion of responses that helped to answer the initial post fell by 0.28 points as the number on a response increased by ten.

We also examined whether responses that gave factual answers referenced a source of information for their response. One third of responses gave a source. In an additional thirty percent personal experience was the source. When there was more than one response to a question, a large proportion concurred or expanded on the previous thread while just 4% of replies disagreed with an earlier posing, suggesting a general concordance in views about particular situations. In short, the site succeeds through most questions obtaining responses quickly in ways that resolve the issue.

Bulletin boards do not rely on prices to equilibrate supply and demand. Absent a price mechanism, the model of equations (1) and (2) makes the number of questions and replies themselves the mechanism that brings the market into equilibrium. By relating the supply of questions positively to responses and negatively to past questions and relating responses positively to questions and negatively to past responses, the model essentially makes replies per question operate as a pseudo-price. Examining the likely shapes of the supply of questions and responses in Figure 4, we see that the equations can produce a stable equilibrium with a fixed ratio of replies to questions. Starting the process with a given number of questions (Q^*), the negative second partial derivative of the supply of questions to the number of responses implies that increases in responses have an increasingly small effect on the supply of questions. Similarly, the second derivative of the supply of responses to the number of questions is also negative, so that increases in questions have an increasingly small effect on the supply of responses. This generates a fixed ratio of replies to questions in equilibrium.

⁹ The regression equation is % of responses that help move the question along = $0.82 - .028$ (.006) number of response in the thread, with $n=14$ and an R^2 of 0.62.

Do users of the site divide between those who pose questions and those who answer them or do users work “both sides of the market” depending on the situation?

To answer this question we divided our sample into three groups: those who only posted questions; those who only posted answers; and those who did both. The largest group only post answers (48%), while the smallest group only posts questions (22%), while the remaining 30% operated on both sides of the market. This means that of those who give answers 38 % (= 30/78) also ask questions while of those who ask questions 58% (=30/52) also give answers, so that among both posers of questions and responders to queries a substantial number of persons work both sides of the market.

Figure 3 displays the frequency of posting (questions and responses) by individuals. The data follow a power law with many people posting a small number of times and a few persons posting many times. Regressing the natural log of the number of individuals posting a given number of posts ($\ln \text{freq}$) on the natural log of the number of posts ($\ln \text{number}$) gives the following relation:

$$(3) \ln (\text{freq}) = 5.27 - 1.58 * (0.08) \ln(\text{number}),$$

where the number in parenthesis is the standard error of the estimate.¹⁰

Dividing postings between questions posed and replies, the data (not given in the figure) show that the questions are less concentrated among a small number of persons than are replies. The top 5% of persons in terms of the number of questions posed asked 29% of all the questions whereas the top 5 % of persons who answered questions gave 35% of the total number of answers. But both distributions diverge from the distributions that would arise if the number of postings were determined “randomly”, in the sense that each representative had a similar probability of making a posting per time unit in a period of n independent time units. In that case, the distribution of postings would be binomial and the

¹⁰ The sample size is 22 and the R^2 is 0.95 in this regression

variance of the number of postings would be smaller than the mean number of postings.¹¹ The data show the opposite: higher variances than means. Put differently, the actual distribution of questions per person (responses per person) is less concentrated around the mean number of questions per person (responses per person) than under the random model. This implies considerable heterogeneity in posing and answering questions. Some representatives are more willing to pose questions or have more problems at their workplace than others while some other representatives are either more willing to answer questions or have greater experience and knowledge to share than other representatives.

Finally, we examined the extent to which on-line interactions led to off-line linkages. Seven percent of responses, covering 17% of threads, advised the person who posed the question to contact a union or TUC official, which would take them off the site. Although less than 3% of questions included off-site contact info and only 7% of responses did, even modest listing of contact information could produce a substantial off-site contacts since many persons are on the site often and may only list their contact information once. On some of the boards, moreover, there was more direction to off-site contacts. Roughly a third of the threads on the “Education, learning and skills” bulletin board contain such off-site contact information, for example. Over time, the percent of threads with off-site information rose from 25% in 2003 to 40% in 2004

That some discussions go off-site suggests that analyses of the threads on the board understate the impact of the site in developing communication among representatives. Even though contact information *per question* or response is modest, it is sufficient to generate the considerable off-site links *per site user* found in our survey. Consistent with this in our longitudinal follow-up survey, a sizable number of respondents (40%) reported meeting people as a result of on-line contact. Moving discussions

¹¹ If X is the number of postings and X is generated by a binomial process where in each of n periods a person has the probability p of making a posting, then the expected value of X is np and the variance of X is $np(1-p)$ so that the variance is smaller than the mean.

off-line could also signify that members view the site as too public a forum for discussion of detailed, incident-specific or sensitive topics as the membership and volume grow. As responses move off-site they lose their public good nature and the answers cease to be part of the archive.

Longitudinal analysis

Workers in the training sample were introduced to unionreps.org.uk as part of their TUC training program. We model the effect of the introduction and/or ensuing use of the site on their behavior and attitudes as representatives using a before-after treatment-control design. While some TUC trainees had seen or visited the unionreps site before training, the vast majority had not done so. Their responses on our cross section survey thus reflect a “before treatment” measure. Using the lingo of analyses of job training/other interventions, trainees who use the site are a “treatment” group while the entire group of trainees are “the intention to treat” group. We then examine whether introduction to the site during training affected ensuing use of the site and whether that was associated with changes in attitudes or behavior as a rep. Whether or not persons in the training sample use the site (ie “take-up”) is of course not random. As we lack a traditional control group that is not exposed to treatment, we will instead use the persons surveyed through the site and already using it in the first period as the control group. The key assumption here is that there are no pre-existing differences in trend between them and the trainees.

Table 6 shows that introduction to the site during training increased ensuing use of it by trainees. The table records the percentage of persons reporting for whom we have responses on both the initial and follow-up surveys. At the time of the cross section survey 68% of trainees had never used the site. Afterwards that proportion was 32%. At the other end of the spectrum, just 18% used the site weekly before training while 29% used it weekly afterwards. By contrast, among the respondents from the sample of users on the site, there is a drop in those who use it weekly or more from 72% to 47%, possibly reflecting a decline in their need to use the site regularly.

Respondents from the on-line sample of users of the site answered some questions about their representative work and attitudes toward unionism differently than did those in the TUC training sample. Table 7 gives the key questions that our cross-section survey sought to assess how worker reps viewed their activity as reps and union activity in general. The on-line sample is more likely to report that their work is taxing and stressful (24% agree with the statement fully by giving a 1 score and while 29% give it a 2 score compared to 14% and 22% for persons in the TUC training sample); that they are well-prepared and trained to be a union representative (22% with complete agreement and 43% with agreement compared to 15% and 26% in the training sample); and that workers at their workplace benefit from the union (58% and 25% compared to 46% and 27% for the training sample). By contrast there is little difference between the samples in views of the extent to which workers or their unions appreciate what they are doing.

To assess whether trainees who began to use the site changed their relative responses to questions about attitudes or behavior relative to previous users, we estimated the following equation:

$$(4) Y_{it} = a + b \text{TREAT}_i + c \text{TREAT}_i * \text{AFTER}_t,$$

where TREAT measures whether the respondent were a part of the group introduced to the unionreps site through the TUC's training program and AFTER is a dummy variable that takes the value 1 for the follow-up survey. The coefficient c measures the change in the dependent variable between those who began to use the site after training compared to the "control" group of those who were already using the site when the first survey was conducted.

Table 8 shows the results of this analysis for three variables for which there was a significant difference in the first round of the survey between the training sample and the on-line sample. Column a under each statement record estimated differences in responses in the *first round* of the survey between persons introduced to the site in the training center and the on-line sample and in parenthesis a t-statistic

for the differences between the two samples. Recalling that higher responses mean greater disagreement with the statement, the coefficient 0.49, for example, shows that the trainees were less likely to say that they were well prepared and trained to be a representative than persons who always used the site.

Column a also gives an estimate of the difference between the two samples in the rate of completing the second survey. The differences are modest. If they were large, we would have a serious sample attrition and selectivity problem.

Column b under each statement gives the coefficients and t statistics for the variables in Equation 4. The coefficients on the dummy for being in the training sample are of similar magnitude to the comparable statistics in column a. The estimates differences between the samples differ because the sample in column b is limited to persons who completed both surveys. The new information in the column b calculations is in the estimates of the effect of introducing the site to trainees. For each statement these estimates are significantly negative, indicating that the trainees introduced to the site *became more like* persons already using the site.¹² The implication is that use of the site influenced trainees: they regard themselves as better prepared and trained to be a union rep and believe more strongly that workers at their workplace benefit from unions. At the same time, they also found their work as a representative more taxing and stressful. All of these effects are presumably due to their being involved with the unionreps.org.uk site and community.

3. Conclusion: where will these innovations lead?

Given the difficulties that U.S. unions have with organizing workers for traditional collective bargaining, it is critical that unions to find ways to circumvent employer opposition to gaining members.

¹²Those who ultimately participated in both rounds of the survey do not appear to significantly differ, at least initially, on any measure except preparedness. Those who chose to participate in both rounds of the survey initially felt more prepared for their representative duties than those who only participated in the first round. While there may be some selective attrition between the rounds it does not appear to be substantial, at least with respect to the initial values of the variables of interest.

The rapid expansion of Working America shows that a movement-based organization that campaigns for worker interests in society on-line and off-line can attract large numbers at low cost. The greater activism of members who join on-line suggests further that the Internet may be a particularly good way to find highly committed persons. What we don't know is whether for its long run stability Working America will have to find ways to deliver union services to workplaces as well as to campaign and lobby for worker interests in society and, if so, whether it will find the right mix of services at the dues members will be willing to pay.

Given the difficulties that British unions have in organizing workers in workplaces with traditional collective bargaining, it is critical for them to improve and personalize services to members. The success of www.unionreps.org.uk in building a community of voluntary worker representatives who exchange information suggests that unions can tap the wisdom of their members to advance this goal at low cost. The greater activism of reps that join the site suggests that it offers a way increase the commitment and effort by reps. What we don't know is whether the transmission of knowledge among reps improves services to workers by enough to attract more members or whether the TUC or constituent unions must go further and use their computer data base information on members to personalize services.

A service provision model that relies on the Internet is that it alleviate concerns of employer opposition, but it has challenges of its own. In collective bargaining, unions are essentially awarded a monopoly after winning recognition. On the Internet and outside the workplace nonunion groups offer information and services to workers that compete with union services.¹³ Unions have, however, some

¹³ Internet recruitment sites such as Monster.com or Careerbuilder.com give information and advice to workers to attract more job applicants. Labor law firms advertise assistance to workers. Human resource divisions of major firms use the company's internal e-mail system and computer records to connect with workers. Internet aside, public interest legal organizations defend the interests of particular types of workers (Jolls, 2005); community groups have formed to help immigrants and

advantages in providing services over the Internet to workers. As member-based organizations that are democratically accountable to workers, they should be more responsive and trustworthy agents than other organizations. And unions can mobilize many more members and activists on a volunteer basis to provide services to fellow workers than can smaller non-member based organizations.

We suspect that Working America and the US unions broadly will have to undertake other innovations to create a viable organization for workers outside of collective bargaining. Studies of high performance workplaces find that single policies rarely transform a workplace. What is needed are complementary policies (Ichniowski, Shaw, Prennushi, 1997) that make the sum of the package exceed the sum of its parts introduced singly. Given its mass membership and activists, Working America could potentially benefit from developing Internet bulletin boards of the www.unionreps.org type to stimulate local members and activists to find new directions for the organization. British unions are also likely to need innovations beyond union.reps.org.uk to improve services and attract free riders at organized workplaces and to expand to other workplaces. What our analysis has shown is that the US and UK central union federations have begun the difficult process of changing how they conduct business and have some successes on which to build further.

various ethnic groups (Osterman, Fine, Lynch), often led by persons with union experience; NGOs have sought to provide portable benefits to workers outside of collective bargaining (Hersch, 2005). The UK's Citizens Advice Bureau offers government protections and assistance to workers more broadly.

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Table 1: The Open Source Union Form vs. Traditional Collective Bargaining

	Traditional	Open Source Form
Membership		
By location	Workplace-based	Independent of workplace; recruited over Internet; local areas outside workplace
Employer Role	Dependent on employer recognition and collective bargaining contract	No veto of representation by employer
Level of dues	High, check-off by employer	Modest/nominal
Free-riders	Incentive to free ride: US agency shop fees	Customized services to members only or by fee
Activities		
Primary business	Collective Bargaining	Political action on broad worker issues; support workers at individual employers
Delivery of services	Workplace or economic sector depending on locus of collective bargaining	Internet; local area
Service providers	Paid union staffers	Volunteers at local level Internet and activist volunteers Expert Bots
Budget	High, based on substantial dues check off	Modest, with potential support from traditional unions, grants from other groups
Main weakness	Depends on getting employer to agree to collective bargaining	Depends on getting workers/community to assist in workplace disputes
Source of power		
workplace	Industrial action, strikes	information
Outside workplace	Political pressure	Members at other work sites Political pressure; local community

Source: Derived and altered from Freeman and Rogers, 2002a

Table 2: Attributes of Working America

1) Organizing Activity as of Winter 2007		
Budget	~\$7.5 million (per year)	
Organizers	250-300	
Cost per recruit	\$11.00	
Members recruited on-line in 2007, 134,796		
2) Demographics of membership		
	WA	US Adults
2 year college degree or more	37%	36%
Attend church at least weekly	41%	40%
Own a gun	32%	35%
Had parents in union	39%	
3) On-line		
members who provide email	263,000	
% who join on-line	18%	
actions on-line	59,058	
% from members who join on-line	60%	

Source: Participant Presentations, Harvard seminar on Working America, November 13-14, 2007

Table 3: Union Reps Internet Use

	Regular trainees	Unionreps.org (OS)
Use Internet daily	45%	87%
Use Internet often		
for rep duties	32%	63%
other union activities	24%	50%
regular job	30%	43%
Use source often or very often		
Training Material	42%	43%
Union Staff	34%	29%
Internet	31%	66%
Older/exp workers	31%	22%
TUC	5%	5%
Use Internet as part of Rep work to find out about:		
training possibilities	61%	78%
worker rights and legislation	82%	96%
pay/working conditions elsewhere	43%	60%
To inform workers of union/activities	60%	76%
To communicate with workers	--	69%
To keep in touch/exchange information with		
union officials	56%	72%
other union reps	59%	80%
other unions/worker orgs	38%	60%
Visit Web Site often		
Own union site	9%	19%
TUC site	6%	11%
Unionreps site	3%	15%

Source: Unionreps.org data files

Table 4: Distribution of Responses to Threads

<i>Number of responses</i>	<i>Our Sample (350)</i>	<i>Total (1090)</i>
0	39(11%)	126 (12%)
1	63(18%)	187 (17%)
2	79 (23%)	233 (21%)
3	52 (15%)	173 (16%)
4	37 (11%)	126 (12%)
5	35 (10%)	87 (8%)
6	14 (4%)	47 (4%)
7	8 (2%)	40 (4%)
8	7 (2%)	18 (2%)
9	4 (1%)	18 (2%)
10	4 (1%)	11 (1%)
>10	8 (2%)	24 (2%)

Source: Sample data, from sampled threads, July 2003 to December 2003
Subscriber data, courtesy site, 12/08/2004

**Table 5: Responses that Moved Toward Answering the Question Posed
(broken out by position of the response on the thread)**

<i>Response # (1=question poster)</i>	<i>Fraction that move toward answering question</i>	<i>Number of Observations</i>
All	0.74	786
2	0.79	304
3	0.64	242
4	0.75	163
5	0.69	110
6	0.71	79
7	0.67	45
8	0.48	31
9	0.70	23
10	0.50	16
11	0.67	12
12	0.38	8
13	0.50	4
14	0.25	4
15 or more	0.41	29

Source: Subscriber data, courtesy site, 12/08/2004

Table 6 Take-up of Site Use by Trainees Introduced to Unionreps.org During Training

Site Use	<i>Training Sample (Treatment Group)</i>		<i>On-line Survey (Control Group)</i>	
	Before	After	Before	After
Once a week or more	18%	29%	72%	47%
Once a month or less	14%	38%	26%	51%
Never	68%	32%	2%	2%

Source: Tabulated for the group that responded to follow-up survey as well as the initial survey; n = 214 for the trainees and 130 for the online survey group

Table 7: Union representatives views of their work activity

On a scale from 1 to 5 where 1 means that you agree completely with the statement and 5 means that you disagree completely, how much do you agree or disagree with the following statements

Panel A: TUC Training Sample	1	2	3	4	5
a. My work as union representative is taxing and stressful	14%	22%	39%	17%	7%
b. I am well-prepared and trained to be a union representative	15%	26%	37%	16%	7%
c. The workers I represent fully appreciate my activities as workers rep	10%	23%	35%	25%	7%
d. My union fully appreciates my work as a union representative	27%	31%	24%	12%	6%
e. The workers at my workplace benefit greatly from having a union	46%	27%	17%	6%	4%
f. The union movement is on the right track for regaining influence on society	16%	28%	41%	12%	4%
Panel B: On-line Sample					
a. My work as union representative is taxing and stressful	24%	29%	28%	13%	6%
b. I am well-prepared and trained to be a union representative	22%	43%	24%	9%	2%
c. The workers I represent fully appreciate my activities as workers rep	10%	28%	38%	17%	7%
d. My union fully appreciates my work as a union representative	24%	35%	24%	13%	4%
e. The workers at my workplace benefit greatly from having a union	58%	25%	10%	4%	2%
f. The union movement is on the right track for regaining influence on society	16%	33%	33%	13%	5%

Source: Unionreps.org data files

Table 8: Coefficient Estimates and t –statistics for the Effect of Being introduced to unionreps.org at TUC Training on Responses to Questions about work as union representatives

(Respondents indicated their agreement with each statement on a 1-5 scale. 1 indicates complete agreement and 5 complete disagreement)

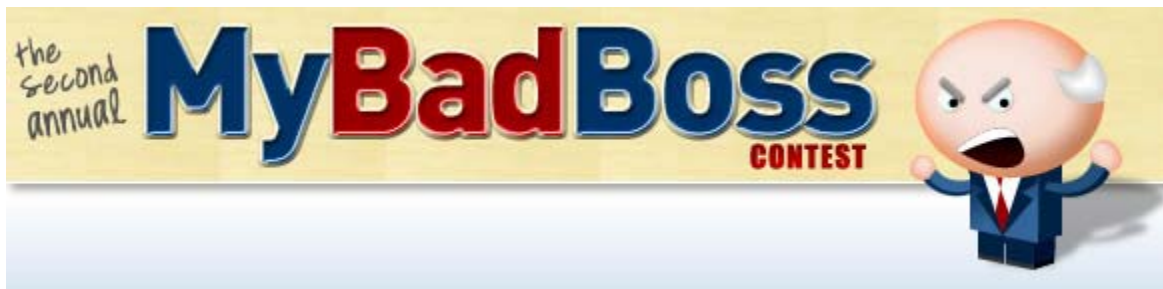
Variable/condition	I am well-prepared and trained to be a union representative		Workers at my work place benefit greatly from the union		Work as a union representative is taxing and stressful	
	(a)	(b)	(a)	(b)	(a)	(b)
Training Sample Dummy (estimated difference between trainees and on-line sample of always users)	0.49 (7.7)	0.31 (3.1)	0.29 (4.6)	0.28 (3.0)	0.34 (5.1)	0.49 (4.3)
Training sample after site introduction (estimated effect of use of site on trainees)		-0.49 (4.4)		-0.29 (4.4)		-0.49 (3.8)
Estimated difference in rate of completing both surveys between trainees and online sample	-0.12 (1.9)		-0.05 (0.8)		0.02 (0.35)	
Sample	First survey	Completed both surveys	First survey	Completed both surveys	First survey	Completed both surveys
Number of observations	1268	562	1267	565	1265	560

Source: Unionreps.org data files

Figure 1: Features of the Working America Website



Volunteer lawyers respond to questions submitted by workers. In 2007, the site received an average of 206 questions per month; 70% of which came from persons new to Working America; the leading area of concern was about overtime pay and firing/termination



This is most popular feature: 3.2 million page views, people stayed 9.2 minutes; 4,000 bad boss stories submitted, 20,000 votes for "worst"; enrolled 6,500 new members



Generated 20,267 "actions" against hustlers; 830 stories, 65% from new members



Canvassers blog about their experiences going door to door to enroll members

Figure 2: Main Areas of Bulletin Board Discussion

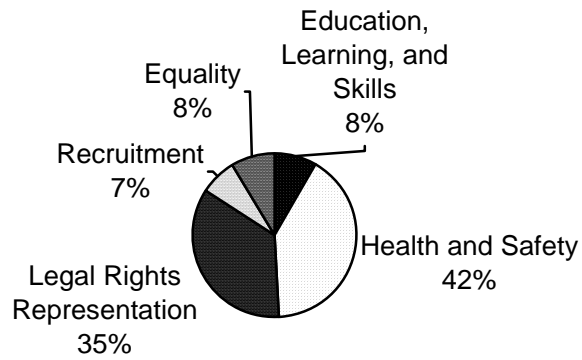
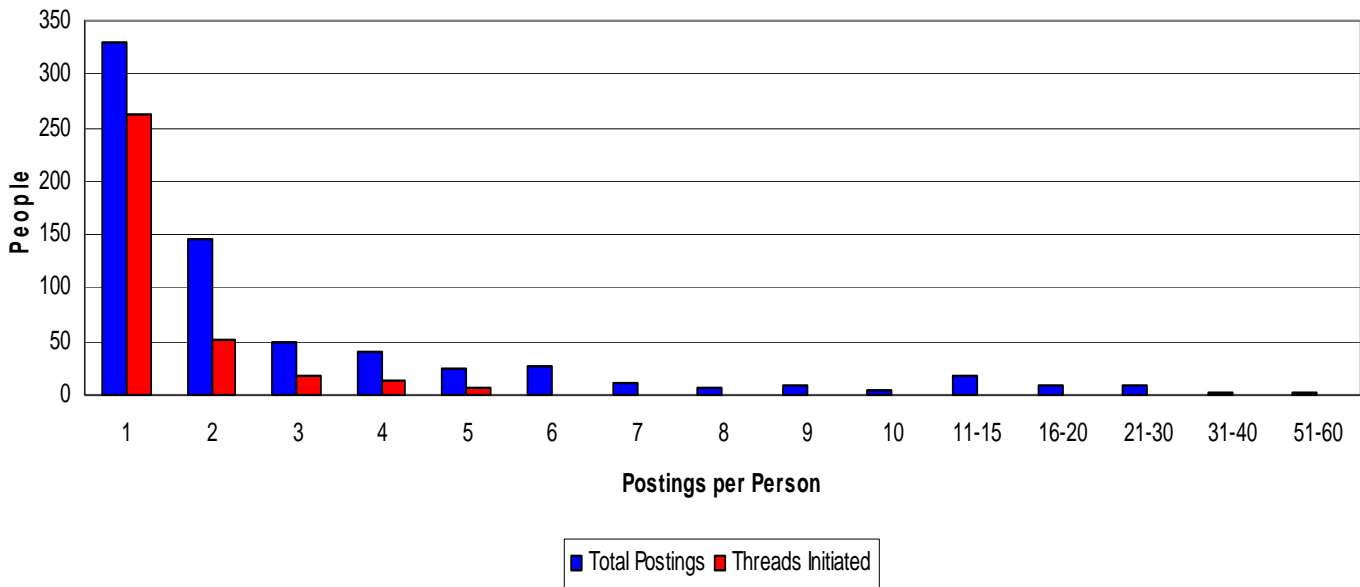
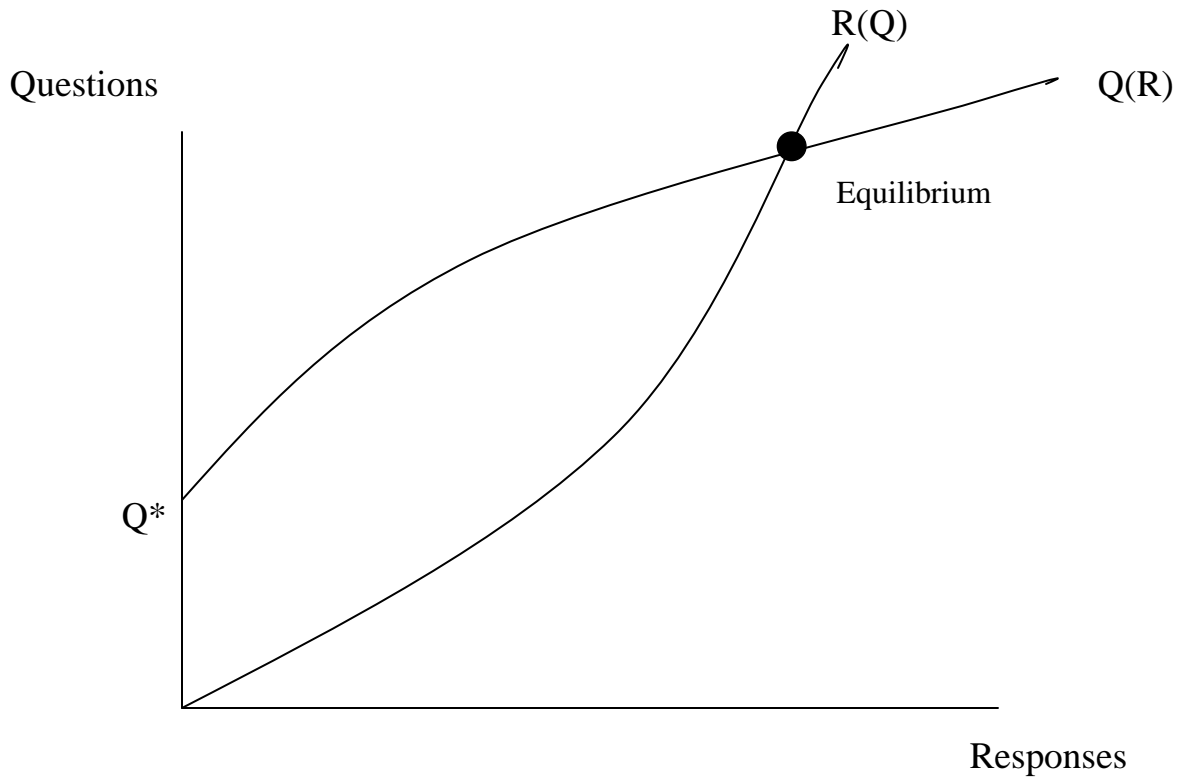


Figure 3: Postings per Person Follows a Power Law



The power law regression: $\ln \# \text{ of people who post } N \text{ times} = 5.27 - 1.58 (0.08) \ln N$ R^2 is 0.95

Figure 4: Equilibrium in the Market for Threads

The question curve starts at some positive value Q^* and rises at a declining rate
The response curve starts at zero and rises at an increasing rate

**Appendix: Cross Section Survey UNIONREPS.ORG.UK Union Representatives Survey
(TUC Training Sample: response counts below)**

<i>1. How long have you been a union rep?</i>	<i>< 1 year</i>	<i>1-2 years</i>	<i>2-5 years</i>	<i>5-10 years</i>	<i>10+ years</i>
	323	149	182	86	110

<i>2. In the last 12 months, how much time have you spent as a union representative on these issues?</i>				
		<i>Lots of time</i>	<i>Some time</i>	<i>No time</i>
a. Maintaining the wages and benefits of employees		137	327	336
b. Security of employment ¹⁴		104	315	367
c. Treatment of employees by management ¹⁵		241	408	159
d. Health and safety of employees ¹⁶		330	377	132
e. Resolving conflicts between employees ¹⁷		90	341	361
f. Finding ways to improve worker skills		58	355	383
g. Recruitment and organization		102	462	252

<i>3. On average, how many hours per week do you usually spend on representative activities, including time spent at the workplace and at home?</i>					
	<i>< 1 hr</i>	<i>1-2 hrs</i>	<i>2-5 hrs</i>	<i>5-10 hrs</i>	<i>10+ hrs</i>
	100	216	246	147	138

<i>4. Does your employer pay for the time spent on representative activities while at work?</i>	<i>Yes</i>	<i>No</i>
	817	36

<i>5. In which of the following occupations are the bulk of the workers that you represent?¹⁸</i>			
	<i>Highly skilled professional</i>	<i>Craft and skilled labour</i>	<i>Less skilled/unskilled</i>
	278	286	215

Coding:

	1	2	3	4	5
<i>6. On a scale from 1 to 5 where 1 means that you agree completely with the statement and 5 means that you disagree completely, how much do you agree or disagree with the following statements</i>					
a. My work as union representative is taxing and stressful	118	191	334	147	63
b. I am well-prepared and trained to be a union representative	124	223	317	137	56
c. The workers I represent fully appreciate my activities as workers rep	88	200	296	213	60
d. My union fully appreciates my work as a union representative	232	265	208	100	47
e. The workers at my workplace benefit greatly from having a union	391	230	145	53	36
f. The union movement is on the right track for regaining influence on society	129	238	350	102	32

¹⁴ 2 responded: 1.5

¹⁵ 4 responded 1.5 and 1 responded 2.5

¹⁶ 3 responded 1.5

¹⁷ 1 chose 1.5 and 2 with 2.5

¹⁸ Some representatives reported that they represent multiple types of workers. 11 represent both “highly skilled professional” and “craft and skilled labour”; 28 represent “craft and skilled labour” and “less skilled/unskilled” labour; and 11 represent workers from all 3 categories. The aforementioned responses are not included in counts presented in the table.

7. How often do you use the following sources to obtain information for your representative duties?

	Often	Sometimes	Rarely	Never
a. From union representative training materials and events	359	395	80	20
b. From full time union staff by calling or writing to them	286	337	164	57
c. From TUC by calling or writing to them	44	192	305	297
d. From older/experienced workers	266	398	125	56
e. From the Internet	258	291	145	151

8. How often do you currently use the Internet (www, email)?

Daily	2-5 times/week	Once a week	Once a month	Never (go to 11)
387	181	97	68	126

9. Where do you usually use the Internet (www, email)?

At work	At home	Other
182	311	23
205		
		4
13		

10. How often do you use the Internet for purposes related to:

- Current job, excluding union rep duties
- Union rep duties
- Other union activities

Often	Sometimes	Rarely	Never
221	206	148	170
235	317	121	73
180	255	183	120

11. If you have never used the Internet for union rep duties, are you interested in using it?

Yes	No
364	34

12. If you use the Internet to support your union rep duties, specify how (tick all that apply)

- To find out about training possibilities
- To inform workers in your workplace about your union and its activities
- To find out about worker rights and employment legislation
- To find out about pay levels and working conditions elsewhere
- To keep in touch and/or exchange information with your union officials
- To keep in touch and/or exchange information with other union representatives
- To keep in touch and/or make contacts with other unions or worker organisations

Yes	No
431	273
422	280
588	128
298	397
393	305
412	285
264	424

13. How often have you visited these web sites?

	> 3 times/wk	2-3 times/wk	Once a wk	Once a month	never
a. Your unions' web site	75	77	194	264	192
b. TUC web site	49	65	131	244	308
c. UNIONREPS.ORG.UK web site	22	39	74	121	539

14. On a scale of 1 to 5, where 1 means that you agree completely with the statement and 5 means that you disagree completely. Answer only if you have used the relevant web sites.

a. My union web site is very useful	145	222	197	57	33
b. The TUC web site is very useful	157	183	159	33	30
c. The UNIONREPS.ORG.UK web site is very useful	77	99	124	35	45
d. On-line training can be effective for union reps	115	157	193	57	40

15. How much loyalty do you have toward

- a. The TUC/wider union movement?
- b. Your local union?
- c. Your national union?
- d. Your employer?

A lot	Some	A little	None
412	341	68	19
638	178	28	2
441	317	66	12
204	378	170	92

16. Age (average)

43.2

17. Gender

Male	Female
603	251