HELPING WORKERS ONLINE AND OFFLINE: UNION AND NONUNION ORGANIZATIONS AS LABOR MARKET INTERMEDIARIES

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Trade unions have historically been the major labor market intermediary for workers. Unions provide workers with information about the employer and the job market broadly; represent individual workers who have grievances about how the firm treated them; and are the voice for workers in dealing with collective goods problems at their workplace. In addition, unions are the key intermediary in monitoring firm compliance with government regulations and lobbying the government on behalf of workers' interests. Underpinning these forms of union activity has been collective bargaining. By negotiating higher wages and better conditions for workers, unions are able to charge dues on the order of 2% of pay, which employers normally check off from earnings, and that gives the unions resources to finance virtually all activities.

As trade union density has fallen, fewer workers obtain intermediary services from unions. Diverse other groups -- labor and community activists, workers, non-governmental organizations, and employer human resource departments concerned with worker well-being -- have sought to provide some of the intermediary services that workers need to navigate the labor market (Freeman, Hersch, Mishel, 2005). Some unions have also tried to help workers outside of collective bargaining, as well.

How successful, if at all, have unions and nonunion groups been in delivering intermediary services to workers who lack collective bargaining contracts? Can unions or other groups create on-line communities that can complement or substitute for off-line worker groups to advance worker interests?

This paper seeks to answer these questions by analyzing innovative uses of the Internet by unions in the United States and United Kingdom.[1] Section 1 lays out the challenge facing unions or other organizations in providing services outside of collective bargaining; and reviews some of the major innovations in delivering services to workers outside of collective bargaining.

[1] For an earlier analyses focused on union use of the Internet, Freeman, Richard B., "From the Webbs to the Web: The Contribution of the Internet to Reviving Union Fortunes" (May 2005). NBER Working Paper No. W11298. Also, Diamond and Freeman.

Section 2 provides a detailed analysis of the Trade Union Congress's effort to build an on-line community of union activists, www.unionreps.org.uk, which we argue is the union innovation that most fits the Internet era. Section 3 is a short summary and conclusion.

1. The Challenge

The challenge facing US unions is simple: to find a way to enlist members and deliver services in the face of strong management opposition to collective bargaining. Private sector union membership has been in freefall since the 1970s, with little sign of any turnaround. In 2006 just 7.4% of private sector wage and salary workers were union members while just 12.0% of all wage and salary workers were members.[2] Despite the AFL-CIO push for unions to increase allocation of resources to organizing that began in the mid 1990s and the formation of the Change to Win union grouping in 2005(http://www.changetowin.org/) to spur organizing, there is little sign of a resurgence of unionism. This, despite the fact that opinion surveys in the early and mid 2000s show that over half of US non managerial nonunion workers want trade unions to represent them compared to 40 or so percent in the 1990s and 30 or so percent in the 1980s (Freeman and Rogers, 2006, chapter 1).

Unions have failed to enlist workers into traditional collective bargaining organizations because organizing is a war of attrition that pits unions against management, which has access to greater resources and diverse advantages in influencing workers during an organizing drive. To improve their chances of winning campaigns, in 2007 unions pressed Congress to enact "card check" recognition (Employee Free Choice Act)[3] in the hope that this would reduce the length and costs of organizing campaigns and limit management influence on outcomes.

The challenge facing UK unions is somewhat different. Density in the UK fell from 1980s through the early 2000s but then stabilized at about 29% of the work force. Private sector

[2] http://www.bls.gov/news.release/pdf/union2.pdf
[3] http://araw.org/takeaction/efca/index.cfm

unionism was 18% in 2006 – two and half times density in the US. Employer opposition to unionism was relatively mild, presumably because collective bargaining in the UK does not cost firms much – the estimated union premium is barely above zero.[4] The problem for unions is that in workplaces with collective bargaining, about 40% of workers free ride on unions. In part, this is because unions have small staffs and rely on voluntary worker or union representatives to sign up new workers as well as deliver other union services at the workplace. To deal with stagnant membership, UK unions convinced the Labour Party to introduce a voting procedure to force union recognition onto recalcitrant employers, but this has had little impact. In addition, unions have merged into larger organizations.[5] Neither of these changes have attracted workers who can free ride to join unions in large numbers.

In both countries, unions face challenges to their role as intermediaries in the labor market from other groups. Some nonunion groups have stepped forward to help workers navigate the labor market because they see unions as unable to provide the relevant services. Public interest legal organizations defend the interests of particular types of workers (Jolls, 2005). Community groups have formed to help immigrants and various ethnic groups (Osterman, Fine, Lynch), often led by persons with union experience. Some groups have sought to provide portable benefits to workers outside of collective bargaining (Hersch). At the same time, groups with little connection to unionism or representing workers have found it in their commercial interest to offer intermediary services. Internet recruitment sites provide information and advice to workers to differentiate their site from others and attract more job applicants; the more applicants they have, the more job vacancies are they likely to attract. Human resource divisions seek to establish labor relations climates to help firms achieve profitability, though

[4] Blanchflower, D.G. and Bryson, A. (2004) 'The Union Wage Premium in the US and the UK**,** Centre for Economic Performance Discussion Paper Number 612
[5] http://www.agf.org.uk/pubs/pdfs/1253web.pdf

there is evidence that the set of practices that give a workplace the label high performance have greater effects on worker well being than profits (Cappelli and Neumark; Freeman and Kleiner). And so on.

Table 1 gives a capsule summary of some of the nonunion and union groups that have tried to deliver various intermediary services to workers outside of collective bargaining. While unions have some natural advantages in competing in the market for services – their "brand name" establishes them as a trusted advocate for workers, and their collective bargaining activity gives them both financial and human resources to spend on low cost non collective bargaining activity – the other groups have advantages as well. Internet recruitment sites offer workers job listings. Legal advocacy and community groups are often viewed as independent "do-gooders" rather than as a special interest group. Occupational associations provide professional services to their members that can be stretched to representative functions more associated with unions (Hurd and Bunge), as has occurred in the American Medical Association, and transformed the National Education Association from occupational association to the US's largest collective bargaining organization. Human resource departments can readily help workers within firms – to the extent that they can act neutrally or fairly. And unions have some disadvantages. They are large bureaucratic organizations, most of whose leaders see union renascence through political activity rather than through provision of services to workers outside of collective bargaining.

major innovations

Table 2 offers brief descriptions of six of the most noteworthy innovations – three of which are union-related and two of which are not. It records how they operate along several dimensions: the audiences they target, whether they sign up members or not, their interactivity, use of e-mail, and so on; and gives their main weakness.

The **Working Families Network** is a massive email list of union members and activists. To put together the list the AFL-CIO had to convince member unions that they would not be surrendering power to the central organization, and to have a mechanism for deciding on which issues to email persons for support. A year or so earlier the Federation had rejected a multi-million dollar offer by a liberal group to gather email addresses from local unions and affiliates around the country. The AFL-CIO system gives individual unions control over usage of their own email list. By 2004 the overall network included over 2 million records of union "eActivists", which gave the AFL-CIO the option of e-mailing small proportions of the list and engaging large numbers of persons, and of localizing its appeals to particular areas. During the 2003 Safeway strike in California, the AFL-CIO directly raised nearly $350,000 for the Safeway grocery workers via two emails to 400,000 people on their main activist list. In addition, it successfully linked its online appeal to offline activity on the ground. To pressure management, the AFL-CIO e-mailed persons in the District of Columbia and asked them to join teams that would confront their local Safeway stores, even though those stores were not on strike. Responders were split by their address to create local teams, and each person on the team then got the email address and phone number of all the other people on their team (their neighbors), plus the local store info. The success of this activity led the AFL-CIO to experiment further with recruiting thousands of volunteers from the eActivist list to go door-to-door in targeted areas to talk to union members about the issues related to the 2004 election – tapping a big network of activists who otherwise would not be involved in local mobilization efforts.

The AFL-CIO's **Working America** was developed as a membership-based community affiliate of the union movement to attract some of the millions of workers who said they wanted unions but could not get them at their workplace. In summer 2004, Working America hired staff in five states to knock on doors daily in neighborhoods with many union members, where non-

members could be expected to have pro-union attitudes, and recruit members (Greenhouse). By November 2004, Working America had signed up 800,000 members and reached about 1.6 million as of summer 2007. The organization focuses on community and national issues rather than problems at specific workplaces that affiliate unions might view as encroaching on their territory. It gathers the email addresses of members and promises members that they will help determine policy through online ballots. In summer 2004, when the Bush administration changed the administrative rules governing overtime, WorkingAmerica showed what it could do on the Web. It added a page "Is Your Overtime Pay at Risk?" to its web site, with an FAQ about the new regulations. The site highlighted a young lawyer who would respond to questions and posted questions and responses – an indication of possible future services that concerned workers could not otherwise readily obtain. As a result of this activity, the organization began attracting over 2,000 members per week via Internet – a conversion rate of visitors to the site of 7% – about as high as any site can do.

In 2002 the Trades Union Congress developed the **Worksmart** web site "to be a one-stop shop for everything to do with your working life". This site contains information about workplace problems and worker rights and links to other sources of information and advice. The site views nonunion workers as its primary audience, and limits itself to giving them information largely on legal rights. It has no membership and does not ask for email addresses. The site specializes in telling workers about their rights at work; but with its small number of visitors, a google search for "workplace rights, UK" in May 2007 placed the site 14th on the list of relevant sites.

The Harvard Worklife and Labor Program Worklifewizard site came on line in fall 2006. It provides information on workplaces, runs contests in which workers tell about workplace experiences, and provides links to other sources of labor market information. Its goal is to obtain

information from a worklife survey, in which the modules of the survey change regularly. Workers who compete the survey receive a personalized answer to their most pressing worklife question by the Wizard, "a Harvard-trained expert". It is striving to reach scale.

Greedyassociates.com started as a website for young attorneys to exchange information about employment opportunities in Manhattan, but quickly grew into a site for young lawyers and new law school graduates to find out about conditions at the top law firms across the country (Taras and Gesser). When young lawyers received higher pay in Silicon Valley than elsewhere, publicity on the site forced the major firms to raise pay to associates in New York and other locals. The main tool for the web site is its message board: lawyers comment on working conditions and ask questions about particular firms. In a market where top firms seek the best law graduates, bad publicity about work conditions can threaten the firm's standing. Taras and Gesser 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 stress 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 last innovation given in table 2 is www.unionreps.org.uk. This site was launched by the Trade Unions Congress in 2003 to link union representatives (reps) around the country into an online community that would support their work and help them provide better services to workers. The site is restricted to worker representatives who receive a unique password when they sign up. In February 2006, the site had 8,400 subscribers – or 3.4% of the approximately 250,000 representatives in the UK – and 16,818 hits per month. The users come from a wide range of unions, industries, and geographic regions that is representative of the UK union

movement.[6] The main feature of the site is a bulletin board through which reps share information and pose questions that other representatives can answer. To the extent that advice from knowledgeable persons improves the decisions that representatives make, the bulletin board can harness the collective wisdom of the group in dealing with workplace problems (Surowiecki). The site also provides information and resources directly to the worker 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 as well as other websites and reference materials that may be of use to worker reps; posts polls to gauge reps' opinions on issues such as the usefulness of on-line training. The site requires limited maintenance by TUC staff to operate smoothly and costs the organization little because it harnesses the voluntary efforts of union reps rather than the paid efforts of union staff to provide content. It creates "public goods" by enabling the entire union representative community to benefit from the questions and answers between two or more reps. Members can search through an archive of previously asked (and answered) questions, so that the answer to any particular question is available to all.

In 2003 we developed a working relation with the TUC staffers who developed the site to provide analysis of its impact on union reps. We were intrigued by the potential of a bulletin board discussion site to improve the skills of union reps in dealing with workplace issues and to create an on-line community of union activists. Could this inexpensive site attract sufficient union reps to improve union provision of intermediary services to workers? Would the average

[6]Forty-seven percent are in the public sector, thirty-six percent worked in industry, and seventeen percent 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

union rep latch onto the use of the Internet as a valuable tool in carrying out their duties? To what extent, if at all, would the site help create a community of union activists?

2. Analyzing www.unionreps.org.uk

To answer these questions, we gathered three types of data.

First, we surveyed union reps undergoing TUC training programs between November 2003 and April 2004 (herein the TUC training sample).[7] These trainees had no special Internet experience and thus are a random group of reps for the purposes of assessing readiness for using the Internet as representatives. We obtained 857 usable responses from this group. In addition, in summer 2004 we surveyed union reps who were already users of the unionreps.org.uk website, using an Internet survey (herein the on-line survey). These users of the unionreps.org site are the potential Internet-savvy reps of the future. We obtained 411 usable responses from this group. Our total sample of 1268 is 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.[8] We took all postings from all parts of 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 specific 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

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

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

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 and the content – whether the threads produced seemingly good responses to initial inquiries.

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. By examining whether or not the trainees who were introduced to the site as part of their training used the site in the future and whether this influenced their attitudes toward their jobs as representatives, we are able to assess the possibility that unions or other groups can use an Internet site to create an on-line community to help provide intermediary services to workers.

Our analysis yielded 5 findings about the use and value of the site.

Finding 1: Cross-section survey shows union reps are "Internet ready"

The first finding from our cross section survey was that a large proportion of union representatives were "Internet ready" to use a site for their representative duties. As table 3 shows, 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 reps had access to the Internet at home. The table shows also 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.[9] Most important, many union reps report that they used the Internet in the course of their representative duties, and used it for a wide spectrum of activities**.** Of course, the sample of subscribers to the site made greater use of the Internet for representative duties but even the trainees made greater

[9] 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.
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use of the Internet for their representative duties than for other union activity or than for 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. 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 fact plus the growing number of subscribers to the site indicate that many users find the site valuable.

Analysis of Threads

The bulletin board at unionreps.org depends on questions posed by union reps. In principle, reps pose questions when they face problems about which they expect that someone else on the site has information or insight to resolve. We assume that problems arise randomly at work places and focus on the decision to pose a question on the site. Since there are no charges for posting a question, the decision is likely to depend on the probability of obtaining a useful response in a reasonable time period. This in turn 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. If there are more possible respondents, the chance of getting a useful response and thus the value of posting a question is likely to be higher than if the site has few subscribers. Contrarily, if the site is loaded with questions and few people provide answers, the chance of getting an answer is likely to decline, discouraging reps from posting their problem. A simple difference equation captures this relation. Let Q_t = the number of new questions supplied 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 our supply of questions becomes:

$$Q_t = f(R_{t-1}, Q_{t-1}) \qquad (1)$$

with, $f_1 > 0$, $f_2 < 0$, $f_{11} < 0$, *and* $f_{22} > 0$

where, f_i and f_{ij} are the partial derivatives.

As a first step for analyzing the actual supply of questions, we calculated the number of new questions posed in our sample per month – the arrival rate of questions. Given data from all threads on the site for 2004, we estimate an arrival rate of questions of approximately 100 per month.

The other side of the market for threads consists of replies to questions. We assume that subscribers to the site arrive randomly, check the questions on the site, and decide whether or not to answer posts that fit into their area of expertise. We hypothesize that the decision to answer a question on the site depends on the number of questions on the site and on the likelihood that someone else might answer the question, which depends on the number of replies on the site. While it is possible that subscribers could get into competition over replies, which would generate lots of replies, we expect that free riding behavior (letting Nigel answer the posts) will create a negative feedback from the number of replies to the likelihood that a given rep will answer a new question. Formally, we assume that the number of replies to questions on the site in period t, R_t, depends positively on the number of questions on the site in the previous period and negatively on the number responses to questions in the previous period, R_{t-1}:

$$R_t = g(Q_{t-1}, R_{t-1}) \qquad (2)$$

with, $g_1 > 0$, $g_2 < 0$, $g_{11} < 0$, *and* $g_{22} > 0$

This form equation makes the points that replies depend on questions with some time lag and that a market imbalance, with many more replies than questions, is likely to correct itself by reducing the number of replies.

Finding 2: Most questions obtained responses quickly and resolved the issue

To examine the supply of replies, we tabulated the distribution of responses to threads in our sample. Column 1 of Table 4 gives the distribution for responses for our threads. It shows that just 11% of the questions received no answers. On average a question obtained 3.1 responses, though the average hides considerable dispersion in the number of responses per answer. Over 12% of threads received more than five responses and one obtained 36 replies. The distribution of responses differs greatly from what one would expect if the responses were randomly assigned to questions. Column 2 gives the distribution of **all** threads on the site in 2004. In this larger sample, 12% of threads received no answers, nearly 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 an important aspect in the market for threads. If a posted question does not get a reply quickly, representatives are likely to be discouraged from posting questions. Fast responses are likely to increase the number of reps posting questions. In our data the median number of days before a first response was received was one day: 35% of questions received a response the same day it was posed, and 22% received a response within a day. Nearly 2/3rds of all questions received a response within two days, and over 80% received a response within a week.

Do the responses help resolve the issue that the question raised? To determine this, 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 while one-quarter did not. The one-quarter of responses that did not move toward answering the initial post were often given at the end of a thread, suggesting that the thread drifted off target as persons respond to previous responses as opposed to the initial inquiry. To verify this interpretation of the evidence,

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[10] on the number of the response. This shows 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. In addition, we examined the extent to which responses that gave factual answers referenced a source of information for their response. One third of responses gave a source. An additional thirty percent involved individuals sharing personal experience for which the personal attesting was the source. When there were 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.

Bulletin boards like www.unionreps.org.uk differ from commercial sites where prices 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 which brings the market into equilibrium. By relating the supply of questions positively to responses per question and relating the responses to questions negatively to responses per question, our model effectively makes the number of replies per question operate as a pseudo-price. Examining the likely shapes of the supply of questions schedule and the supply of responses as in Figure 4, we see that the equations produce a stable equilibrium in which there is fixed ratio of replies to questions. Starting the process with a given number of questions (Q* in the figure), 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

[10] 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.

increases in questions have an increasingly small effect on the supply of responses. As the figure shows, the model generates a fixed ratio of replies to questions in equilibrium.

Finding 3: The population of active users has persons on both sides of the market, but shows substantial heterogeneity

Underlying the posted questions and replies on the site are the behavior of individual reps. How many of the site's active participants post questions? Is there a sharp divide between participants who pose questions and those who reply to posts or do participants work "both sides of the market" depending on the situation?

To begin, we divided the active participants in our sample into three groups: those who only posted questions; those who only posted answers; and those who did both. The largest group post answers only (48%), while the smallest group are those who post questions only (22%), and 30% operated on both sides of the market for threads. Since only about 22% have posted a question but never responded to someone else's question and 58% (= 30%/(30%+ 22%)) of those who posted questions have also answered them, the divide between questioners and responders is smaller than one might have expected.

To see if there is a difference in the frequency of postings between questions posed and replies, we tabulated the distribution of the numbers of questions and replies separately, replicating figure 3. The data show that the questions are less concentrated among a small number of persons than are the replies. The top 5 percent of persons in terms of the number of questions posed asked 29% of all the questions whereas the top 5 percent of persons who answered questions gave 35% of the total number of answers.

Both distributions diverge substantially from the distributions we would have obtained if the number of postings were determined by the number of postings over a period of n independent time units in which each representative had a similar probability of making a

posting per time unit. In that circumstance, the distribution of number of postings would be binomial and the variance of the number of postings would be smaller than the mean of the number of postings.[11] The data show the opposite: higher variances than means. In other words, if each representative who posed a question had the same probability of posing a question, the distribution of numbers of questions would have been more concentrated around the average number of questions per person than we in fact observe. Similarly, if each representative who answered a question had the same probability of answering a question, the distribution of numbers of replies would have been more concentrated around the average number of replies per person than we in fact observe.

The implication is that the site contains a heterogenous population. Some representatives are either more willing to pose questions or have more problems at their workplace which they anticipate other representatives will help them resolve than others. And some representatives are either more willing to answer questions or have greater experience and knowledge that they are willing to share than other representatives.

Finding 4: On-line communication led to some off-line linkages

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, using either email or telephone or face-to-face meeting. Although less than 3% of questions posted include off-site contact info and only 7% of responses did, the fact that many of the reps who ask questions or post replies do so more than once, suggests that even modest listing of contact information could produce a substantial number of persons offer their off-site contacts. On some of the boards, moreover, there was much more direction to off-site contacts. Roughly a third of the threads on

[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.

the "Education, learning and skills" bulletin board contain such off-site contact information, for example. These exchanges rose over time, moreover. Forty percent of threads initiated in 2004 contained off-site contact information, but only a quarter did in 2003. That some discussions go off-site suggests that analyses of the threads on the bulletin board understate the impact of the site in developing communication among representatives. The implication is that 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.

Analyzing the longitudinal survey

Workers in the training sample were introduced to the unionreps.org site. We model the effect of the introduction and/or ensuing use of the site on their behavior and attitudes as representatives in the same manner as analysts examine the effects of training or other interventions. While some trainees had seen or visited the unionreps site before training, the vast majority had not done so. Their responses about their representative activities and attitudes on our cross section survey thus reflect a "before treatment" measure. The responses of those who then went on to use the site can be viewed as an "after treatment" group; while the responses of the entire group of trainees can be viewed as "the intention to treat" group. Using this perspective we examine whether introduction to the site during training had an effect on ensuing use of the site and whether that was associated with any changes in attitudes or reported behavior.

Finding 5: Introducing trainees to the site produced a high "take-up rate"

Table 6 shows that introduction to the site during training had a substantial impact on ensuing use. It 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%, presumably reflecting a decline in their need to use the site regularly.

Respondents from the on-line sample of users of the web site differed in some important ways from those in the TUC training sample in terms of their answers to some questions about their representative work and their attitudes toward what unionism does for workers. Table 7 gives the key questions which our cross-section survey sought to assess how worker reps viewed their and union activity in providing services to workers. There are marked differences in responses to three of the questions. 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; while 29% give it a 2 score compared in the OS sample 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 in the OS sample compared to 15% and 26% in the training sample); and in whether workers at their workplace benefit from the union (58% and 25% for the OS sample compared to 46% and 27% for the training sample). By contrast there is little difference between the samples in their views of the extent to which workers or their unions appreciate what they are doing.

Finding 6: The attitudes of trainees who were introduced to the site and began to use it converged toward those of the initial users of the site.

To assess whether trainees who were introduced and began to use the site altered their attitudes toward those of previous users, as shown in table 7, we estimated the following equation:

(4) Yit = a + b TREAT + c TREAT*AFTER, where TREAT measures whether they ever went to the OS site, and AFTER is a dummy variable that takes the value 1 for the follow-up survey. The coefficient c reflects the change in attitudes of persons who began to use the site compared to the "control" group of persons in the OS sample. Table 8 shows the results of this analysis. The column labeled "difference between OS sample and all trainees" gives the mean difference between the responses shown in table 7, with the response 1 coded as 1, 2 coded as 2, and so on. It gives a single numeric and t test for the difference between the two samples already noted. The column labeled "Estimated Effect of Use of Site on Trainees" gives the coefficient c in the equation. For the three measures where the OS sample differed significantly from the trainees, the trainees introduced to the site have become more like the OS sample.

4. Conclusion

In sum, there is a new market for intermediary services to workers outside of collective bargaining. Various groups have developed innovative ways to deliver some services, though none has put together the "full package". For unions to become the major voice of workers in this new market, they will have to sign up members for whom they do not bargain for wages and benefits, charge little or no dues, deliver information and advice over the Internet; combine off-line and on-line activities; pressure employers to improve conditions at particular workplaces without being able to strike, and develop a new solidaristic community of workers across different workplaces. This means reinventing at least part of their membership and activities – creating a new open source union form (Freeman and Rogers (2004). Whether they or other organizations will succeed depends on the extent to which particular innovations provide the

services workers want and whether these services can be combined to form a broader organization with the loyalty, solidarity, and community of members that characterized unions in the past.

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Table 1: Non-union groups can provide intermediate services just as do unions

Form of Intermediate Service	Nonunion Group	Union Group
1) Info/advice – Can deliver over Internet at low cost	Nonunion job boards; advice centers; law firms; Harvard worklifewizard	
2) Represent individual grievances – internet plus "local agent"	Legal aid groups; works council; human resource or personnel and labor relations department;	workers reps (UK)
3/4) Deal with collective problems/ legal regulations	US community groups/worker centers for day laborers; legal aid groups;	
5) Form community with solidarity in crisis	Immigrant groups faced with potential deportation; www.moveon.org	AFL-CIO Working Family Network www.unionvoice.org
6) Lobby in politics	AARP	WorkingAmerica.org;
7) Gain higher wages/ benefits	Use publicity-greedyassociates Working today; Living wage campaigners	

Source: For discussion of some of these groups as of the early 2000s, see Freeman, Hersch and Mishel.

Table 2: Characteristics of Six Innovations That Deliver Intermediary Union-type services over the Web

	Working Families Network (www.unionvoice.org)	www.workingamerica.org	www.worksmart.org.uk	Www.worklifewizard.org)	www.greedyassociates.com	www.unionreps.org.uk
Target	activists	nonunion workers	nonunion workers	all workers	young lawyers; new law graduates	activists/ representatives
Members	no	yes	no	no	no	subscribers
Provides information on request	no	yes	yes	yes	no	yes
Personalized responses	no	some	no	yes for persons who fill out survey	no	yes
Interactive features	no	no	no	yes	yes	Bulletin board
E-mail used for campaigns	yes	not yet	no	no	no	no
Workplace organization	no	no	no	no	no	no
community structure	some experiments	neighborhood	no	no	no	Self-organize offline
# members/ sub-scribers/visitors	2 million email addresses	1600000	3,000 visitors per month	1,000 visitors per month	3,000 visitors Alexa rank 835,287	8.400 subscribers
Maximum population	16 million union members	20 million pro union non-organized	400,000 non-union workers with problem	150 million workers	100,000??	250,000
Main weakness	No interaction/ feedback	Run from DC; does not obtain employer to form workplace group	Small, No emails/organize;	Small, No emails/organize;	Works in sellers market	Limited to activists

Source: case investigations of each innovation, For estimated numbers of visitors, http://snapshot.compete.com/

Table 3: Percent of Union Reps Who Use Internet and

	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%

Table 4: Distribution of Responses to Threads

Number of responses	Our Sample (350)	Total (1090)
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: The Number and Percentage of Responses that Moved toward answering the question , by position of the response on the thread

Response # (1=question poster)	Fraction that move toward answering question	Number of Observations
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: Effect of Introducing Trainees to Unionreps.org during training

	Trainees (treatment)			Online Survey (Control)	
USED SITE	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 OS 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: CEP, LSE survey of union representatives

Table 8 **Longitudinal "Tests" of effect of trainees trying unionreps.org**
(Scaled so number 1 is complete agreement with statement and 5 is complete disagreement)

Measure	Difference between OS sample and all trainees and t statistic for significance	Estimated Effect of Use of Site on Trainees and t statistic for significance
Work as Union representative is taxing and stressful	-0.34 (5.1)	-0.50 (3.8)
Well-prepared and trained to be a union representative	-0.49 (7.7)	-0.51 (4.5)
Workers at workplace benefit greatly from union	-0.30 (4.6)	-0.28 (2.7)

Figure 1: Percentage of Union Reps Who Use Internet for representative duties, for other union activities, and for their job

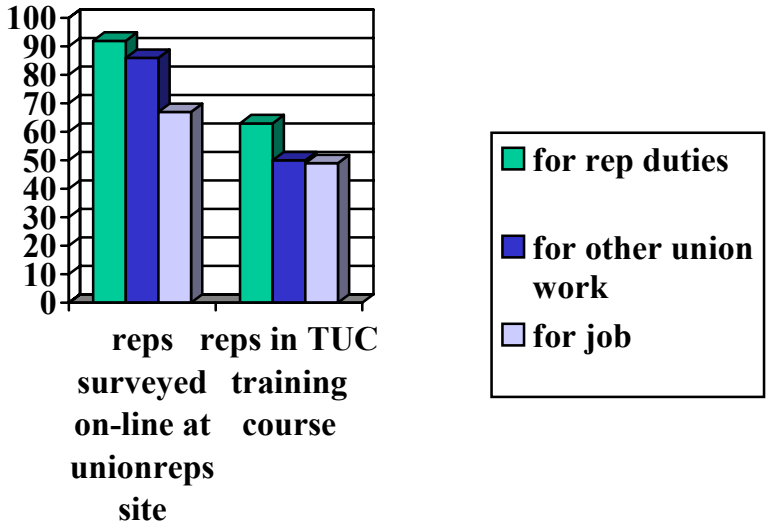


Figure 2: Main Areas of Discussion on Bulletin Board

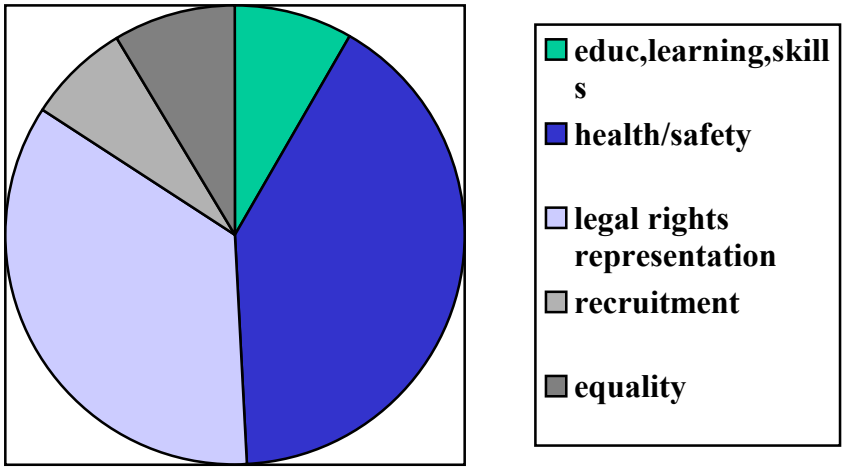
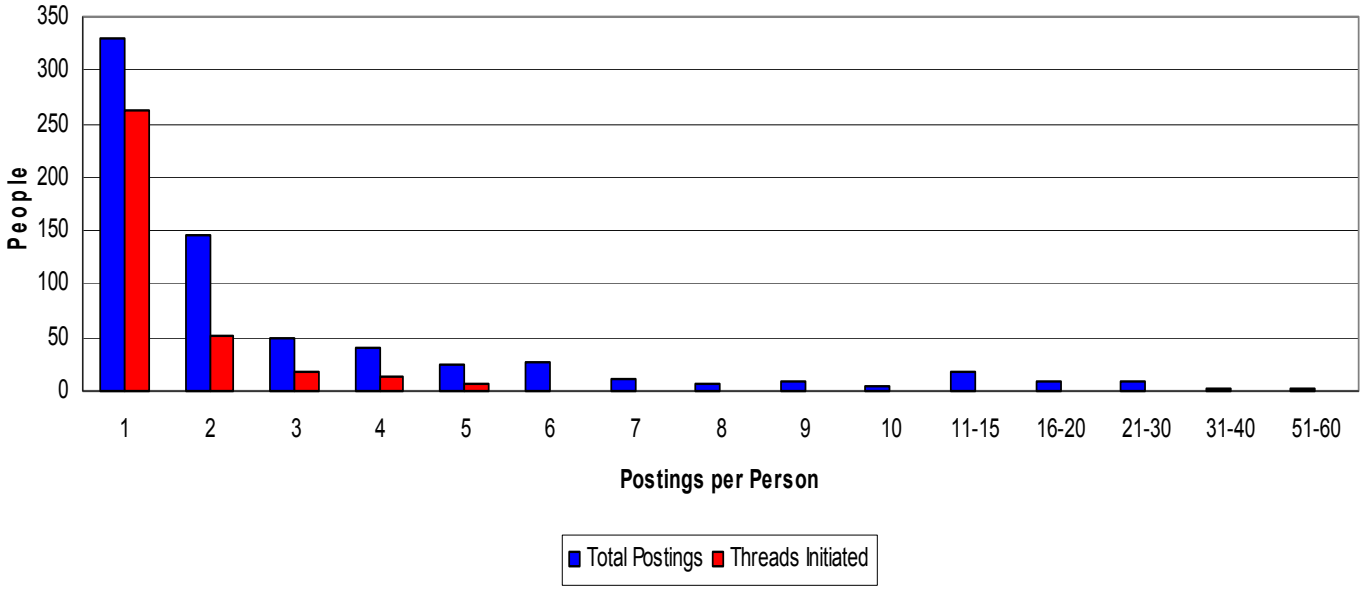
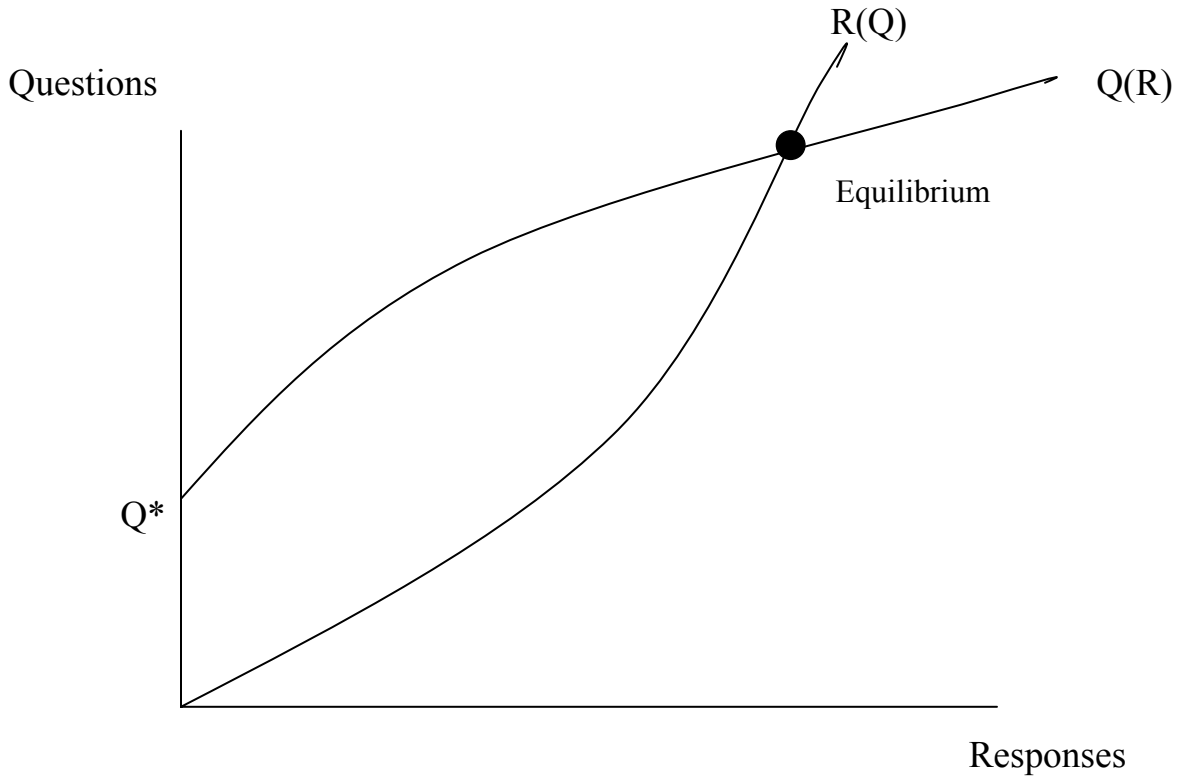


Figure 3: Number of people by number of postings per person follows a power law



The power law regression: ln # of people who post N 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)

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

2. In the last 12 months, how much time have you spent as a union representative on these issues?	Lots of time	Some time	No time
a. Maintaining the wages and benefits of employees	137	327	336
b. Security of employment[12]	104	315	367
c. Treatment of employees by management[13]	241	408	159
d. Health and safety of employees[14]	330	377	132
e. Resolving conflicts between employees[15]	90	341	361
f. Finding ways to improve worker skills	58	355	383
g. Recruitment and organization	102	462	252

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

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

5. In which of the following occupations are the bulk of the workers that you represent?[16]	Highly skilled professional	Craft and skilled labour	Less skilled/unskilled
	278	286	215

Coding: **1 2 3 4 5**

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					
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

[12] 2 responded: 1.5
[13] 4 responded 1.5 and 1 responded 2.5
[14] 3 responded 1.5
[15] 1 chose 1.5 and 2 with 2.5
[16] 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 <u>not</u> included in counts presented in the table.

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

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:

	Often	Sometimes	Rarely	Never
a. Current job, excluding union rep duties	221	206	148	170
b. Union rep duties	235	317	121	73
c. Other union activities	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)

	Yes	No
a. To find out about training possibilities	431	273
b. To inform workers in your workplace about your union and its activities	422	280
c. To find out about worker rights and employment legislation	588	128
d. To find out about pay levels and working conditions elsewhere	298	397
e. To keep in touch and/or exchange information with your union officials	393	305
f. To keep in touch and/or exchange information with other union representatives	412	285
g. To keep in touch and/or make contacts with other unions or worker organisations	264	424

13. How often have you visited these web sites?

> 3 times/wk	2-3 times/wk	Once a wk	Once a mnth	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 lot	Some	A little	None
a. The TUC/wider union movement?	412	341	68	19
b. Your local union?	638	178	28	2
c. Your national union?	441	317	66	12
d. Your employer?	204	378	170	92

16. Age

Avg: 43.2

17. Gender

Male	Female
603	251