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This article examines the postdoctoral unionization movement at the University of California (UC) using case study methodology. More specifically, we examine postdoctoral union organizers involved in the United Automobile Workers of America (UAW) Local 5810, focusing on their efforts to unionize postdoctoral employees at the UC. The study is situated within the broader context of neoliberal influences and the corporatization of the contemporary U.S. research university. The case of the UC postdoc union movement is seen as particularly important given that approximately 1/10th of all U.S. university postdoctoral workers are employed at the UC and the quest to meet UC's postdoctoral research needs is increasingly global in nature. Accordingly, we rely on two primary sources of data: the collection and analysis of key documents and semistructured interviews with postdoctoral union organizers. The findings focus on three key issues: 1) conditions of workplace vulnerability; 2) challenges of organizing a postdoctoral union and negotiating a contract; and 3) outcomes of the unionization process.

Keywords: academic labor unions, academic labor union contract negotiations, academic workers, academic worker solidarity, corporatization of higher education, new managerialism, postdoctoral workforce, academic working conditions

Introduction

When asked why he helped to found the Princeton University Federation of Teachers Local 552 in 1938, Albert Einstein responded, "I consider it important, indeed urgently necessary, for intellectual work-

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ers to get together, both to protect their own economic status and, also, generally speaking, to secure their influence in the political field." We also believe that the unionization of intellectual workers is necessary to protect the value of their academic labor and to advance their potential to influence university decision making. Indeed, such a point of view may in fact be more relevant today than in the past. We say this on the basis of a broad body of argumentation and evidence pointing to the reality that modern universities—most notably research universities—are increasingly organized as global economic enterprises to be guided by management principles consistent with the ideals of market fundamentalism, or what some have described as "neoliberalism" (Marginson & Considine, 2000; Rhoads & Torres, 2006; Slaughter & Rhoades, 2004). Writers critiquing this version of the research university, with its heavy focus on the commodification of research outcomes toward the objective of commercialization and marketization, have employed a variety of less-than complimentary descriptors, including such phrases as "knowledge factory," "corporate academy," "corporate university," "university inc.," and so forth (Aronowitz, 2000; Giroux, 2002; Rhoads & Rhoades, 2005; Washburn, 2005).

Einstein's views about the unionization of academic workers helps ground our discussion of postdoctoral unionization efforts and consider the ways in which university leaders, including both administrative and faculty leaders, think about the research enterprise. For example, at research universities such as the University of California (UC), research is a marker of institutional status and prestige. Indeed, many national and global ranking schemes are heavily tied to research outcomes, including such items as research expenditures and the number of scholarly publications; in such a competitive context, it is generally believed that the more research the better. Furthermore, research products have become highly commodified and marketized as part of the quest for status but also as a means to procure additional university revenues. Slaughter and Rhoades (2004) discussed this model of university enterprise as academic capitalism, arguing that leading research universities in the United States and elsewhere have adjusted to a more global and competitive higher education environment. Within this context, and primarily referencing the United States, postdoctoral employees are seen as key components to the way in which research universities are financed and structured (Stephan, 2012). Postdoctoral employees generally work in research labs that in a sense "belong" to the faculty Principal Investigator, and the lab model is considered to be an efficient method to train scientists and an inexpensive way to finance research (Black & Stephan,

2010; Stephan, Black, & Chang, 2007). Within a laboratory environment in which PIs carry so much weight, it is understandable that not only are labs sometimes seen to belong to particular PIs, but that postdoctoral employees as well might be considered in such a manner.

Adding to the influence of the PI in the science/lab nexus is the reality that the modern research university increasingly operates as a business enterprise in which intellectual labor becomes more and more hyper-individualized. Indeed, faculty life at U.S. research universities tends to be organized on the basis of a star system, wherein faculty as individual knowledge entrepreneurs must negotiate the terms of their employment. Those most successful in generating research revenue tend to have greater bargaining power when it comes to interacting with vice presidents, deans, and department chairs. But the star system only works for a small minority—the big winners in the world of academic capitalism. The vast majority of faculty members, who just like the stars must fend for themselves, tend to lack leverage in their negotiations. This enables academic managers to enact divide-and-conquer strategies when it comes to negotiations with faculty as knowledge workers. The result is that only the highest achieving knowledge workers, increasingly defined not in terms of the quality of their ideas but in terms of the amount of revenue they generate, have the opportunity to influence their relative value, and, at times, shape institutional decision making. The vast majority of intellectual workers are excluded from such opportunities. This reality is especially true of postdoctoral employees who exist in a kind of middle world between graduate students and professors, and in a very real sense remain largely silent and invisible within the hierarchical structure of the lab (Black & Stephan, 2010; Cantwell, 2011; Cantwell & Lee, 2010).

What is especially troubling about the plight of intellectual labor in the United States, and particularly with regard to postdoctoral workers, is the reality that the U.S. research university has gained incredible influence over the global higher education market place, to the extent that it is often held up as the idealized model for others to follow. For example, Mohrman, Ma, and Baker (2008) described the Emerging Global Model (EGM) as the world-class university ideal, noting that such a model derives to a great extent from the United States. Clark's (1998, 2004) work on the advance of the entrepreneurial model of the research university was largely shaped by his knowledge and experience with the U.S. rendition. Rhoads (2011) argued that despite the serious shortcomings of the U.S. research university model—including a willingness at times to compromise basic moral principles for income generation—the

model nonetheless is increasingly benchmarked by other nations seeking to elevate university research and academic science, including such rising powers as the People's Republic of China (Rhoads & Chang, 2011).

A key facet of the growing role of the U.S. research university as a global model is the strength of such universities in the area of internationalization. For example, the EGM advanced by Mohrman, Ma, and Baker (2008) stresses the growing reality that research universities are global enterprises and that meeting the need for intellectual labor is increasingly an international enterprise. The entire world in essence has become the geographic reference point for top research universities seeking academic talent. A global market place of potential employees is particularly relevant for postdoctoral workers. This is quite evident when one examines the case of the United States, noting that its research universities employ large numbers of foreign-born postdoctoral employees, especially in the natural and applied sciences, including engineering and computer science (Cantwell, 2009, 2011). Indeed, recent data from the National Science Foundation (2010) confirms such an assertion, noting that internationals make up approximately 53% of the science, engineering, and health postdocs. Additionally, the NSF WebCASPAR Integrated Science and Engineering Resources Data System reveals that the number of international science and engineering postdocs working at U.S. universities tripled between 1985 and 2006, and that the period from 2006 to 2010 saw an additional 20% increase. Clearly, the recruitment and labor context of postdocs in the United States has become an issue of international magnitude.

Given the large numbers of international postdoctoral workers at U.S. research universities, and in light of the growing influence and engagement of such universities globally, issues relating to postdoctoral workers' rights and benefits are not to be taken lightly. With the UC employing approximately 1/10th of all U.S. university postdoctoral workers (Tuna, 2010), it offers an important example of the rationale, challenges, and potential benefits of organizing postdoctoral employees. With this in mind, we look to the UC and the relatively recent success of the United Automobile Workers of America (UAW) Local 5810 in organizing postdoctoral employees. To better understand the case of UC postdoctoral unionization, we adopt case study methodology, relying primarily on key documents and semistructured interviews with postdoctoral union organizers. Our primary research questions may be stated as follows: 1) On what basis do postdoctoral union organizers support the need to unionize? 2) What are the major barriers to successfully organizing postdoctoral employees and then negotiating a con-

tract? And 3) What do organizers see as the key outcomes or benefits of postdoctoral unionization?

Our intent in this article is not to present both sides of a contentious debate—such information can easily be obtained from local and national newspapers (and typically such complex issues have far more than two sides to the debate). Instead, our goal is to better understand the particularized thoughts and actions of postdoctoral union organizers, on the basis of their understanding of the need to advance collective bargaining for postdoctoral workers. We focus on this goal because we believe the unionization of intellectual workers is increasingly necessary, as both a response to and a form of opposition to the corporatization of the university described by Rhoads and Rhoades (2005) in their analysis of graduate student unionization. In addition, research demonstrates that unions have a significant influence in advancing the collective interests of the workforce, and that their influence typically goes beyond simply increasing wages and benefits for laborers (Freeman & Medoff, 1979; Medoff, 1979; Yates, 2009). Similarly, academic laborers within the university enterprise also have benefited from unionization (Rhoades, 1998; Rhoades & Rhoads, 2003). Unionized academics have formal influence over their working conditions, a just discipline and dismissal process, and an agreed upon workload, to name just a few of the usual benefits (Berry, 2005; Nelson, 1997; Rhoades, 1998; Rhoades & Rhoads, 2003; Rhoads & Rhoades, 2005).

Postdoctoral Workers in the United States

According to the National Postdoctoral Association (2009), a "postdoctoral scholar . . . is an individual holding a doctoral degree who is engaged in a temporary period of mentored research and/or scholarly training for the purpose of acquiring the professional skills needed to pursue a career path of his or her choosing." The concept of postdoctoral level research originated in European research institutions during the 1870s, which defined postdoctoral work as a type of high-level apprenticeship (NRC, 1969; Zumeta, 1985). In 1876, John Hopkins University was the first university in the United States to adopt a similar type of apprenticeship model. Postdoctoral training was further legitimized in the 1920s when the Rockefeller Foundation provided postdoctoral fellowships to physical scientists. The years during and immediately following World Wars I and II were pivotal in raising the status of academic science and the need for greater federal support of university research (Geiger, 1986, 1993); such federal support served to increase the need for postdoctoral fellows. Eventually, fellowships and appren-

ticeship programs for a whole host of fields of study expanded and postdoctoral scholars came to comprise a unique subpopulation within the higher education scholarly community (NRC, 1969).

Recent evidence points to the significant role of postdocs in supporting the U.S. research enterprise. However, estimating the total size of the postdoctoral workforce is challenging for several reasons. First, the temporary nature of the postdoc appointment translates to a constantly changing, oftentimes migratory influx of workers. Second, some survey samples do not include nonacademic postdocs or include job titles (e.g., research scientist) that are essentially postdocs (Black & Stephan, 2010; National Science Board, 2008; Regets, 1998). The NSF (2008) estimated that approximately 89,000 postdocs were engaged in research in the United States. NSF data from 2010 revealed that in higher education alone there were over 63,000 postdoctoral employees in science, engineering, and health fields, a 34% increase from 2004, but this figure does not include those employed outside of academe, at the many nonuniversity research labs and scientific facilities (NSF, 2010). Along these lines, the National Postdoctoral Association (2009) noted that the number of postdocs had steadily increased over the years and that the position had more or less become the next step for Ph.D. recipients pursuing scientific careers in many fields. To a great extent, this reflects the massive commitment of the U.S. federal government to developing academic science.

As discussed by Stephan (2005, 2012), the exponential increase of university research facilities within the last decade was in response to the increased budget for the National Institutes of Health (NIH). Specifically, between 1998 and 2003 the NIH budget doubled, "opening a panoply of what universities perceived to be new opportunities to expand their research efforts, and in the process, enhance their reputation" (Stephan, 2012, p. 3). Subsequently, the importance of postdoctoral workers to university research, arguably, has never been greater than it is today. Research universities increasingly depend on postdoctoral employees to carry out and support the development of major research projects and they have become key players in meeting university research objectives. The increasing employment trends of postdoctoral researchers is indicative of the demand for this type of workforce. For example, from 1998 to 2007, there was a 21% increase of postdoctoral employees, and from 2002 to 2007, 45% of U.S. Ph.D. recipients had completed or were employed as postdoctoral researchers (Cantwell & Lee, 2010; Hoffer, Grigorian, & Hedberg, 2008). Of particular importance to this article is the fact that postdoctoral appointments have be-

come increasingly longer and cross-national (Black & Stephan, 2010; Cantwell & Lee, 2010; NRC, 2000).

At the same time that the availability of postdoctoral workers at a global level has expanded for many research universities, the U.S federal government has put greater effort into increasing the number of U.S. students pursuing careers in science, technology, engineering, and mathematics (STEM), arguing that a shortage exists despite some evidence to suggest otherwise (Bracey, 2008; Lowel & Salzman, 2007; Teitelbaum, 2003). Consequently, federal STEM recruitment policies, combined with expansion of the global market for postdocs, supported by favorable immigration conditions, hold the potential to produce an excess of scientific labor and possibly weaken salaries and benefits for postdocs. Such conditions seem quite favorable for business and industry, including the university as a business enterprise, but much less favorable for postdoctoral employees, especially in light their temporary contracts and limited institutional influence. Two additional issues further the potential disempowerment of postdoctoral workers. One issue relates to the reality that academic science programs largely operate on the basis of a star professor system, thus situating postdocs with little influence in the very processes that shape their professional lives. A second issue relates to the fact that many postdocs are internationals. Consequently, out of concern for their tenuous residency, they may be less likely to raise questions about possible labor exploitation. Given this perfect storm of postdoctoral conditions, it is not hard to imagine why some postdoctoral employees might consider collective bargaining.

Postdocs have been concerned about their working conditions for quite some time. The first NRC (1969) report to investigate postdoctoral experiences in the United States demonstrated inadequate support for postdocs, both financial and within the university system. Since then, several academic research organizations, nonprofit organizations, and governmental agencies have sought to understand the quality of the postdoctoral training experience and postdoc workforce trends, subsequently advocating for welfare of the postdoctoral workforce (Reed & Micoli, 2005). The National Postdoctoral Association (NPA), founded in 2003, perhaps became the most prominent organization to advocate for the postdoc workforce (Reed & Micoli, 2005). In collaboration with other organizations, the NPA called for institutions to implement their recommended practices and support postdoctoral research (NPA, 2005). This effort was advanced by NSF modifications of postdoctoral fellowship programs, which included additional mentorship and training (ACA, 2007). Similarly, the NIH increased the institutional allowance

for postdocs to pay for postdoc health insurance in 2005 and again in 2012 (NIH, 2012), and the Department of Homeland Security and State facilitated the immigration process for international postdocs working in the United States (Wasem, 2012). However, despite some perceived progress, university administrators and faculty PIs still are not obligated to uphold or enhance postdoctoral working conditions. For example, though NIH published a recommended salary scale for postdocs in 2002 (NIH, 2002), the UC did not uphold the NIH-recommended scale for all postdocs until ratification of the collective bargaining contract in 2010.

The Corporate University and Unionization

We see the conditions of contemporary postdoctoral workers as being shaped to a large degree by a neoliberal model of the political economy of the globalized research university. We understand neoliberalism to be a framework whereby the State's main role is to support an open market system, cultivate competition, and incentivize economic growth and the success of corporatized industries (Boron, 2006; Boron & Torres, 1996; Chomsky, 1999; Hall & Jacques, 1990, Morrow & Torres, 2000). Consistent with the dominance of neoliberalism, numerous scholars have described the mission and purpose of the contemporary university as essentially shifting away from a public good model to more of a privatized one rooted in the market place (Giroux, 2002; Gumport, 2000; Nelson, 2007; Slaughter & Rhoades, 2004). Within the higher education arena, neoliberal ideology typically is enacted at the level of university operations in terms of an emphasis on the commodification and marketization (Rhoads, 2011; Rhoads & Torres, 2006; Santos, 2006). This ideological context perpetuates a culture in which students are defined as consumers (Giroux, 2002), university outputs such as new knowledge and ideas get defined as commodities to be marketized globally (Rhoads, 2011), faculty are seen as managed resources (Rhoades, 1998), and university senior administrators regard themselves or are regarded as CEOs (Rhoads, 2003). True to neoliberalist ideals, universities must increasingly turn to private funding sources, while facing widespread pressure to do more with less.

Neoliberalism adopted as part of the administrative apparatus of the university is often described in terms of the "new managerialism." Under models consistent with the new managerialism, administrators engage as "corporate managers," focusing their attention more and more on the bottom line, often employing corporatized forms of cost-benefit analysis that at times seem quite removed from the intellectual or academic vision of the university (Deem, 1998, 2001). For many higher

education employees, this more corporatized shift translates to an increased workload, reduced compensation, and decreased authority to enact change (Levin, 2007). As Deem (2001) noted, the new managerialism seeks to maximize efficiency and effectiveness in part through the adoption of internal cost centers and the promotion of competition among them; this may involve "explicit attempts to alter the regimes and cultures of organizations and the values of staff, so that they more closely resemble those found in the private for-profit sector" (p. 11). Based on new managerial practices, graduate student employees, postdoctoral workers, and adjunct faculty arguably become the most susceptible to the institution's increased efforts to reduce costs. Hence, the unionization of graduate student employees and adjunct faculty seems a reasonable response to increasing possibilities for the exploitation of their intellectual labor. Along these lines, several scholars noted increased interest in unionization among these populations during the 1990s and early 2000s, viewing such a trend as a form of political resistance and opposition to the corporatization of the university (Lafer, 2003; Nelson, 1997; Rhoades & Rhoads, 2003; Rhoads, 2003; Rhoads & Rhoades, 2005). However, critics of the unionization of academic workers tend to subscribe to the idea that the university represents a culture of "academic exceptionalism," a general belief that universities do not constitute the type of labor environment associated with blue-collar workers (where unions traditionally are more active), and hence, lack the need for collective bargaining (Bender & Kinkela, 2001, p. 9). It is quite common for critics to argue that unions are detrimental to the collegial culture of academe, but this flies in the face of the obvious managerial shift of universities to more corporatized policies and practices (Deem, 1998, 2001; Giroux, 2002; Rhoads & Rhoades, 2005).

In the context of the corporate model of the university and the dominance of the new managerialism, postdoctoral workers are positioned only a small step above graduate student employees and below regular faculty. As a managed resource contributing sophisticated intellectual work, the systemic use of postdoctoral employees results in major economic benefits for universities. To illustrate, Cantwell's (2009, 2011) research regarding postdoctoral employees and their productivity indicates that they are relatively low-cost in comparison to their produced research capital. Research also showcases the increasing institutional dependence on international postdoctoral workers and their subsequent cross-border mobility and vulnerability (Cantwell, 2011; Cantwell & Lee, 2010). Given the growing influence of corporate models in guiding the management of universities, and in light of the vulnerabilities of postdoctoral employees, there is a clear need to better understand ef-

forts to empower this group of university workers. An important case in point is the postdoctoral unionization movement at the University of California.

Case Study Methodology

We see case study methodology as ideal for the research goals framing this project, especially in light of the need to contextualize a variety of complex issues and circumstances. Yin (1994) specifically noted that the case study was an important research methodology for studying complex social phenomenon in their "real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). In the case of our study, the phenomenon we seek to shed light on is the unionization of postdoctoral employees and the real-life context is the University of California, and specifically, the work environment of postdoctoral employees. The fact that postdoctoral unionization efforts and the context of the UC work environment are quite interrelated reinforces the need for case study analysis and the relevance of focusing on postdoctoral union organizers, given their roles both as UAW organizers and as UC employees.

Background of the Case

Approximately 6,000 postdoctoral employees are employed within the UC with UC San Francisco, UC Berkeley, and UC Los Angeles employing about 50% of the UC postdoc workforce (UCOP, 2011). According to UAW (2012c) data, and similar to NSF data, the vast majority of UC postdoctoral employees (94%) work within science, technology, engineering, and mathematics fields with the remaining employees working within the humanities and social sciences (6%). Furthermore, both the UAW leadership and the UC Office of Postdoctoral Affairs estimate that at least 60% of the postdoctoral workforce are international employees (Des Jarlais, 2012; Personal Correspondence, 2011).

Prior to successful unionization in 2010, the only means of collective postdoctoral employee representation within the UC was the Postdoctoral Scholars Association (PSA), formed at UC San Francisco in 1995 in response to a series of work-related concerns. Eventually, PSAs were formed at other UC campuses and collectively they referred to themselves as the UC Council of Postdoctoral Scholars (CPS) (UCCPS, 2006). However, it is important to note that though the various PSAs and the collective CPS represents the interest of postdoctoral employees, the association is completely funded and supported by the UC (UCSF, 2011). These organizations were effective in advancing the in-

terest of the postdocs, to the extent that the UC administration allowed. For example, in 1996 the UCSF PSA conducted a postdoc workplace survey, working with other campuses to obtain additional information. Survey results demonstrated UC-wide workplace concerns (e.g., inadequate mentoring, low salaries, fear of unemployment, etc., but the UC administration did not implement system-wide policies for postdocs until July 2003, including leaving the resolution of workplace issues to the discretion of the respective university chancellor, which essentially represented no change (UCCPS, 2010; UCSF, 2011).

Presently, there are 12 different labor unions that represent 60,000 plus UC employees (UCOP, 2012). Among these labor unions, the United Auto Workers of America Local 2865 (also referred to as UAW 2865) has represented UC academic student employees since 1999. Per the history of the postdoctoral union, in 2005 postdoctoral researchers, some of whom were previously members of the academic student employee union (Local 2865), approached the International UAW and requested assistance in establishing the first ever stand-alone postdoctoral union in the United States (UAW, 2012b).The process for unionizing postdocs moved rapidly, especially when compared to the 61 years it took the UC academic student employees to be recognized as a union (UAW, 2012a). Perhaps this was a result of the UCs perceived inability to effectively resolve workplace concerns. In 2006 a group that began the organizing drive known as Postdoctoral Researchers Organize/UAW or PRO/UAW reached a "50-percent-plus-one" vote to achieve union recognition by the Public Employees Relations Board (PERB). However, because 500 to 600 postdoctoral employees who signed in support of unionizing were no longer UC employees when the petition eventually was filed, the UAW withdrew the petition.

UAW organizers and postdoctoral employees attempted to unionize for a second time in August 2008 with a quicker turnaround and PERB approving a petition signed by the majority of the UC postdoctoral employees. The employees involved in the organizing drive formed a bargaining team and engaged in an 18-month process of negotiating a contract with the UC Labor Relations Board. A tentative agreement eventually was reached and a contract was ratified on August 11, 2010 by a 96% margin (UAW, 2010).

Data Collection

Data collection involved two primary procedures, both approved as part of the UCLA IRB review process: 1) document collection and analysis, and 2) the use of semistructured interviews involving postdoctoral union organizers. Our collection and analysis of documents

primarily focused on three key documents (other documents were also analyzed but these three were critical): 1) the UC Academic Personnel Manual-390 titled, "Appointment and Promotion: Postdoctoral Scholars," but typically simply known as APM-390, which from July 1, 2003 until the ratification of the union contract served as the official source of postdoctoral workplace rights and benefits (before July 1, 2003 rights and benefits for the postdoctoral workforce varied by campus and department); 2) the UC-UAW Collective Bargaining Agreement; and 3) the field hearing before the Committee on Education and Labor for the U.S. House of Representatives, resulting in the governmental report "Understanding Problems in First Contract Negotiations: Postdoctoral Scholar Bargaining at the University of California" (U.S. House, 2010).

A second data collection procedure involved the use of semistructured interviews conducted with current or former postdoctoral employees who are/were active leaders within the postdoctoral union. Though the collective bargaining contract applies to all postdoctoral employees, regardless of union membership status, postdoctoral employees actively involved in working to unionize their colleagues have a unique perspective. Postdoctoral union organizers consider themselves as part of the university fabric and also have a sense of obligation to the group to which they identify as employees. Their narratives provide insight into both the unionization process as well as the four-year-long labor dispute with senior university administrators.

Interview participants were purposefully recruited on the basis of their active involvement with the union and were identified to us by key informants familiar with the UC postdoctoral unionization process. Fifteen postdoc union leaders were contacted via e-mail to participate in the study and eventually 10 responded and agreed to be interviewed. This type of purposeful sampling is seen as a sound strategy for achieving rich data about a phenomenon under study (Jones, Torres, & Arminio, 2006). Interviews were scheduled either in person or over the phone and lasted approximately one hour. Interviews were digitally recorded and transcribed verbatim during the summer of 2012. Interview questions derived primarily from the three main areas of inquiry: the experiences of postdoctoral employees prior to unionization and relating to the work environment; challenges faced by organizers as part of the union drive and the collective bargaining process; and changes deriving from successful unionization and a new postdoctoral contract. The sample of interview participants includes six males and four females. Three of the interview participants are non-US residents (at the time of their postdoctoral employment), and the racial breakdown is evenly divided among minorities and nonminorities.

Data Analysis

We employed Boyatzis' (1998) categorical analysis to interpret the interview data and documents. A priori themes derived from the areas of inquiry served to frame the analysis. In addition, thematic analysis produced additional salient themes from the data. After themes were outlined, the coding architecture was developed by compressing large amounts of data into units of analysis. To ensure the codes were supported by text, the data and related codes were reviewed twice and we continued to look for data that represented each category until the data did not provide additional insight into a theme (Creswell, 2013). Although the interview transcripts were helpful in addressing all three research questions, the documents proved most useful in terms of examining particular questions. For example, the field hearing report from the House Committee on Education and Labor helped to address our second research question relating to barriers faced by union organizers, while APM-390 and the UC-UAW Collective Bargaining Agreement were most helpful in better understanding the third research question concerning the outcomes or benefits of postdoctoral unionization. As part of strengthening the study's authenticity, and in a manner consistent with strategies of member checking, important themes and related findings were shared with the study's participants (Lincoln & Guba, 1986). Feedback from the member-check process was considered as part of finalizing this article.

Findings

We organize our findings around three key issues: 1) conditions of workplace vulnerability; 2) challenges of organizing a postdoctoral union and negotiating a contract; and 3) outcomes of the unionization process. In what follows we use our analysis of interview data and key documents to highlight aspects of these three key issues.

Conditions of Workplace Vulnerability

Utilizing diverse examples and echoing research regarding the postdoctoral experience (Cantwell, 2009, 2011; Cantwell & Lee, 2010), postdoctoral union organizers described a hierarchical culture within academia and the ways in which postdoctoral employees exist on the "outskirts," at times feeling quite vulnerable in their workplace environments. In the process of describing the quality of the work environment for postdoctoral employees, several organizers contrasted their experiences with other types of employees, such as graduate student

workers. One organizer offered the following: "Graduate students are more visible to the academic community, I think, because the university wants to have a good graduation record. . . . But postdocs come and go, no one hears about them. There is not a push to say 'we've had really good postdocs' in the same way they would speak about graduate students. Along these lines, another postdoc union organizer noted different forms of support provided to graduate students by comparison to postdoctoral employees and the way in which the disparate treatment perpetuated feelings of vulnerability. Most concluded that the sense of community one experiences as a graduate student does not exist as a postdoctoral employee. A postdoc organizer described some of the working conditions that contributed to such perceptions:

> Compared to grad school I felt like things were always much less unclear, in terms of what rights we had, whether we would get a raise or not, whether or when we could or could not take vacations, what the constraints were for taking time off, all of these things were relatively unclear . . . and it was generally unclear where you could get information.

Also contributing to the postdocs' conditions of vulnerability was the rigid hierarchical lab structure, which challenged collaboration and collegiality with their respective supervisors. The participants described the ways in which they worked "under" their PI, and how the structure oftentimes contributed to feelings of disempowerment. Illustrative of the hierarchical lab structure, a postdoc organizer described the way in which a PI employed his authority "over" the workforce:

> The PI mistreated another postdoc and told him, "I am the CEO of the lab, I am the boss, and everybody in the lab from the technician to the postdocs have to listen to me." He viewed it like a business, a type of total control . . . I felt like I could not talk to my PI openly about what I thought. I learned very early on that I had to do everything he says.

During the interview process, all of the participants discussed the implications of the hierarchical lab structure and the ways it enabled an abuse of power on the part of PIs. The most salient issues relating to the lab structure that advanced conditions of vulnerability was that there was no enforcement mechanism for the PI to be a "good employer." For example, PIs can mentor a postdoc to the degree that they desire, as their authority is unquestioned and final. In addition, regardless of the relationship or work issues between the PI and a postdoc, the postdoc typically felt great pressure to excel, believing that future professional

employment was dependent on a recommendation from the PI. A postdoc organizer described the power dynamics and the ultimate authority of the PI:

> Your mentor will mentor you to the degree he feels like it. . . . We now have the Individual Development Plan [collective bargaining article] that we can insist on but PIs are senior in rank and it's hard to teach an old dog new tricks. If the PI feels that you're not a priority, then there is no way that you're going to convince him that it's his job to mentor you. . . . The power dynamics are not there in that regard.

Another postdoc described the challenges of advocating for himself within the power dynamics of the relationship with the PI and the pressure to succeed even though he was not receiving sufficient support.

> When there were concerns with what I was doing, it was always between me and the PI and the expectations were high. The expectations were that you produce, that you work really hard and get a lot of publications, it was like work, work, work . . . I had the most difficulty getting grants . . . But I didn't deal with it on the level of "I don't think the mentoring is working to the level that I need." I guess I didn't feel empowered to do that. I thought it would negatively affect our relationship.

Postdocs repeatedly described circumstances in which they perceived themselves as being at the mercy of their PI and/or understood that their work experience was dependent on the goodwill of the supervisor. Dramatic testimony during the 2010 field hearings before the House Committee on Education and Labor and focusing on experienced or witnessed labor violations highlighted the vulnerability that postdoctoral employees often experience. The following two comments were telling:

> I was hesitant to tell my employer that I was pregnant, but given her positive evaluation of my work and her assurance concerning funding, I made the announcement. Shortly thereafter, my supervisor told me that there had been a change: There was no longer funding for my position . . . When I explained my situation with an administrator his response was, "Oh lord," and then, "You should focus on finding another job. Don't cause trouble. The scientific community is very small, and you're likely to regret it if you burn your bridges."

> I feel like the work environment was not okay. I could not talk to my PI openly about what I thought. I tried to do experiments and tell him it is not going

> to work. I learned very early that I have to do what he said. He told me very early, "It's my money, I tell you what you should do . . . if you do it on your own you should be a PI not a postdoc." I felt threatened. Somehow when he spoke, I thought . . . it's probably time to shut my mouth. I should not speak because I have a visa and I don't want things to be messy.

These types of concerns are critical to address if postdoctoral workers are to have the protections that typical employees deserve.

An organizer also commented on the vulnerable conditions faced by postdoctoral employees, noting that, "There are a large number of postdocs who sort of exist at the whim of changing policy or the moods of their departments or PIs . . . or whatever because they don't really have a standing policy within the university system." This postdoc organizer went on to argue that "representation or collective bargaining" is key to protecting the rights of postdocs and helping them to not feel as if they are "expendable and interchangeable." As he went on to note, lack of collective representation "makes it easy for things to get worse, and it makes it harder for good situations to arise because it's sort of a race to the bottom in terms of working conditions." The comments from this organizer capture aspects of the disempowering work environment many postdocs experience. Though not all postdoctoral employees are likely to acknowledge mistreatment by their respective PIs, all the postdoctoral organizers interviewed for this study argued that a power differential automatically exists between postdocs and PIs, and thus the structure of the relationship elevates the possibility for mistreatment and conditions of vulnerability.

Issues of vulnerability also arose around discussions of workload and the possibilities of exploitation. For example, one postdoctoral organizer described his work environment this way: "You never take vacation as a matter of personal policy, you never take sick days, you work late, you do all-nighters, and you work weekends." This organizer went on to characterize communication between himself and his supervisor, especially in terms of workload expectations: "Very authoritarian style of leadership. The PI walks into the office at 5:30 in the afternoon, dumps work on your desk and says, 'For tomorrow morning.' And you're like thinking, 'Okay, let me cancel my life plans.'" Another organizer echoed the preceding sentiment, noting that she had to work every weekend and did not take a vacation during her entire four-year postdoctoral appointment. Despite the intense workload, the postdoc described herself as "lucky" because her "PI was very kind."

In highlighting the nature of the work environment prior to passage of the union contract, numerous examples of work-related stress were noted by the interviewees. One organizer put it this way: "The thing that

I can see is that no one is smiling. Everyone is working and is stressed out. Certainly everyone there [in the lab] has a tough life. That is visible. Everyone looks stressed." A second described his impression of the stressful work environment: "The feeling I got was this is what you get and you gotta sink or swim." Some connected the stress levels to the absolute authority of PIs. One organizer described feeling "at the mercy of the PI," because "the PI was kind of known to be oppressive at times and there was a culture of fear in the lab. We were scared of the wrath of the PI. There were some that filed grievances against the PI, but that didn't go anywhere." In addition to the absolute rule by the PIs, the postdoctoral organizers believed that the university administration favored the interests of PIs in grievance procedures. One organizer described how a postdoctoral worker was left out as an author for a collaborative project and how another was made first author while having a relationship with a PI. This organizer described a grievance procedure that was followed, and an extensive report that was submitted by the postdoctoral employee who felt harmed. All she got in return was a "one page response saying that her grievance had been carefully assessed and no wrong was found. That was it . . . very dissatisfying and not completely transparent."

The future job opportunities for postdoctoral employees also was tied to a great extent to the PIs, namely in the form of recommendations for possible positions. From what we could gather, the recommendation letter and type of reference that a PI provides at the conclusion of a postdoctoral appointment is one of the biggest reasons why postdoctoral employees work tirelessly. Additionally, most organizers described an environment in which the PI determines the nature of the work environment and the quality of the postdoctoral experience is largely influenced by the character and personality of the respective PI. More than one organizer talked about the luck of the draw in terms of having a PI who is kind and decent versus working with a tyrant. This kind of lack of control over one's work environment in part contributed to such widespread support for the unionization of UC postdoctoral employees.

Challenges of Organizing a Postdoctoral Union and Negotiating a Contract

Challenges in organizing a postdoctoral union faced a major obstacle in confronting the "academic exceptionalism" so common throughout academe. One organizer described the problem in this manner:

> There is kind of a long-standing culture of academics feeling like they need to sacrifice for their work or the calling of science. . . . It feeds into this cul-

> ture of not really standing for any of the basic principles that unions stand for, like better working conditions, rights for workers, stuff like that. You know, there is a kind of "suck it up and take it" attitude that unfortunately people have internalized.

This organizer went on to add that to tell people to set this culture of exceptionalism aside, and that maybe things "should be better," is not so easy. According to the organizers, academic exceptionalism is the reason why subpar working conditions are justified.

One postdoc organizer described how the idea of having workplace rights was personally disregarded, "Well I have to say that during the time I was a postdoc, I never thought I had rights. Rights? It's like what rights do I have? It never came to mind because the expectations are so high and you've been trained on what to expect . . . that you're on your own." Relatedly, another postdoc described how the work culture limited the postdocs' perceived ability to assert themselves and subsequently made it more difficult to organize postdocs:

> The culture is ingrained that we just don't know how to deal with our boss [PI] and the way they treat us. . . . They [other postdocs] were annoyed or scared when we talked to them. I went around and talked to postdocs, one woman said "well I support it but I can't afford the extra money [union dues]." And I said, "I'm a single mom, have two kids, and I think it's worth it. To be part of a union, to have a union, the benefits far outweigh the cost.

Another postdoc observed:

> When I was organizing and talking to other postdocs about their experiences, there were a lot of comments among international postdocs and women that made it difficult. They would say, "I can't do this, I can't do that, because I have a family and my visa will be taken away."

Despite the challenges, postdoc organizers continued to meet with fellow postdocs in a systematic and organized manner; either by organizing department meetings/bargaining updates or meeting with postdocs on an individual basis. The organizers ability to maintain communication was key.

A major challenge to postdoctoral organizing was navigating the opposition offered by the UC administration while simultaneously maintaining union support among postdoctoral employees. The administrative opposition is not too surprising given that studies of graduate student unionization revealed similar forms of resistance (Julius &

Gumport, 2003; Lee et al., 2004; Rhoads & Rhoades, 2005). Forms of administrative resistance reported by postdoc organizers included prolonging negotiations, verbalizing opposition during contract negotiations, and actively supporting a union decertification effort during the union negotiation process. All the organizers who participated in the contract negotiation process confirmed that the length of time was not only excessive but that the university thwarted progress by not fulfilling information requested in a timely manner or failed to bargain in good faith. An organizer described the frustrating process, "The biggest challenge was the university. I came in a bit naïve about just how ideologically opposed the university was towards the postdocs finally unionizing. . . . They [the university] were very entrenched and not interested in working together with us to work through the issues and in presenting facts; my impression was that they were trying to block or derail the process."

Administrative tactics to prolong or derail the process impacted the morale of the bargaining team. For example, a bargaining team member recalled having to correct the university administrators about the fact that they were not graduate students; in essence, the bargaining team had to fight for a basic form of recognition of postdocs. One organizer recalled, "During bargaining you could see how arrogant the university is, they wanted to give us as little as possible; you felt small, like an animal. . . . The chief negotiator [for the university] didn't even know who postdocs were. She thought we were graduate students and some of them would refer to us as postdoctoral students."

The bargaining team, during the bargaining process, was also subjected to presentations as to why a postdoctoral union was not necessary even though the union was publicly recognized and already supported by the majority of postdocs. One organizer recalled how a professor, during a contract bargaining session, discussed how postdoctoral employees are like "chickens that he had to incubate in his lab," reinforcing their lowly standing within the university hierarchy. This organizer added, "His personal view was a very patronizing one, where he made it clear that . . . there would be no possibility for postdocs to challenge his authority, because it was his sole responsibility to mold them according to his own wisdom."

Frustration about the bargaining process, after 18 months of negotiations, became all the more evident during the field hearing conducted by the House Committee on Education and Labor (U.S. House, 2010). Several union-related concerns were highlighted at the hearing, including: outstanding workplace issues (e.g., wages, health care, recognition of work experience, etc., a one-year old, unfulfilled information request,

and documented PERB violations. Accordingly, the postdoc union organizing committee asserted the need to quickly conclude bargaining for the sake of improving basic working conditions for the postdoctoral workforce. A UC representative attempted to defend the actions of the university and explain the slowness of the bargaining process but failed to produce evidence in support of the university's position. Although the purpose of the field hearing was to better understand the postdoctoral union's bargaining challenges, and not necessarily to mediate the process, the House committee nonetheless questioned the credibility of the university administration. The hearing concluded with a stern warning on behalf of the House committee, stating that a premier, public research university had the obligation to do right by its employees, and as such, bargaining should conclude as quickly as possible. Five months after the field hearing, negotiations concluded and all outstanding issues were resolved.

Throughout the negotiations, the postdoc organizers faced challenges in maintaining sustained, statewide communication with the postdoctoral employees they sought to represent. This was especially true with regard to communicating bargaining updates; the postdoc bargaining team expressed a desire to be open and communicative about the bargaining process, but there was also a need to be strategic in what was communicated so as to prevent the university from knowing the bargaining team's bottom line, overall strategy, or next steps in pressuring the university to settle the contract. Therefore, finding a balance between being transparent and strategic proved at times to be quite taxing for the bargaining committee. As one postdoc organizer recalled,

> The process was based on what postdocs felt were the most important issues and making sure we had a process. . . . We would have meetings and surveys to get postdoc feedback but we were all coming with our own perspectives. Some people felt that the university was more adverse than others, but we talked through the issues and decided that was not the point—the point was to focus on the bargaining issues on a case by case basis.

However, despite the described challenges, all postdoc organizers remained focused on the overall importance of achieving a collective bargaining contract.

Outcomes of Unionization

Two key documents—the UC Academic Personnel Manual-390 (APM-390) and the UC-UAW Collective Bargaining Agreement—were the focus of our analysis of changes as a consequence of collective bar-

gaining. In size and scope alone, the collective bargaining contract covers a plethora of issues completely ignored by APM-390 (the collective bargaining contract is six times the length of the APM manual). More specifically, the collective bargaining contract outlines rights for postdoctoral scholars and provides a thorough description of many postdoctoral work issues. For example, the compensation article of the union contract specifies each step scale in accordance to years of experience, defines experience, and guarantees minimum wage increases (regardless of being above scale). Furthermore, the wage scale is in accordance with federal standards set by the National Institutes of Health (NIH), across all UC campuses and for all postdoctoral employees. This is in stark contrast to APM-390, which delineates "a common salary/stipend scale, initially ranging from $29,000 to $75,324" (p. 1). The APM-390 goes to note that, "This range is sufficient to provide salaries and stipends that are both appropriate to the postdoctoral scholar's educational background and qualifications and competitive with stipends provided by other leading research universities" (p. 1). The difference between the APM minimum and maximum is vast, potentially contributing to significant inequities especially in light of the high cost of living at some UC locales. By contrast, the minimum salary secured by the union negotiated contract was $38,000.

Postdoctoral organizers agreed that strengthening language pertaining to working conditions and workplace rights was necessary for the well-being of postdoctoral employees. For example, previous to the union contract, healthcare was not uniformly provided for all postdoctoral workers until 2005 (Benderly, 2004), and APM-390 only had a threadbare sentence pertaining to healthcare benefits. However, as a result of collective bargaining the contract mandates that all postdoctoral employees are entitled to healthcare, and spouses and children have access to the same healthcare benefits. The contract also includes no cost coverage of life insurance, accidental death and dismemberment insurance, and short-term disability (UAW, 2011). None of these were guaranteed under APM-390. Furthermore, the contract stabilized benefits and costs for health insurance through 2015 and established a health care committee made up of UC administrators and postdoc union leaders to explore ways to improve benefits and reduce costs for health insurance in future years.

Even following the union contract there was a sense among organizers that filing a grievance and/or holding a supervisor accountable was not so easy, though postdoctoral employees have increased workplace rights and resources. Postdoctoral organizers did not provide a conclusive summary explaining how the overall power dynamic between post-

doctoral employees and PIs could be challenged, but they did agree that the postdoctoral union was a starting point toward promoting forms of self-empowerment. All organizers, to varying degrees, agreed that the first bargaining contract was an important step toward challenging the status quo and providing postdoctoral employees resources in resolving work-related problems. One organizer succinctly summarized the collective sentiment: "In human resources it's really helpful to have a clear set of rules and advocates for the two sides, having a way to mediate things. I think the university may have tried that . . . but it just doesn't work. . . . You need someone to advocate for you if you got in trouble, or have a potential problem. There needs to be a way to standardize things so that you're not taken advantage of." Along these lines, and prior to the collective bargaining contract, APM-390 definitively stated that the ultimate source of authority is the respective university chancellor, further noting that chancellors had the right to establish policies in addition to APM-390. The formal policies provided an appearance of due process, but the ultimate source of authority in deciding whether postdoctoral rights were violated resided with the chancellor. According to the postdoc organizers, one of the most important features of the union contract is the provision of due process up to and including arbitration by a neutral third party, and though despite a postdoc's potential hesitation to participate in the grievance process, the contract nonetheless fundamentally changes how work issues are to be fairly resolved.

Finally, the organizers unanimously believed that the rights gained as a consequence of the bargaining process could not have been won and/or sustained without the union contract holding the UC administration accountable. Regardless of the degree to which their work environment changed after the ratification of the collective bargaining contract, there was a unified conviction that working conditions have improved. Specifically, the organizers agreed that the UC system, and the broader economic environment in which universities operate, was highly unlikely to support ongoing and sustained progress for postdoctoral workers. One organizer eloquently summarized the general sentiment:

> The reality of the situation is that at the end of the day the UC is still a business. Why would they give you more money? Why would they give you more when they can get away with giving you less? And that's the way it is with all corporations, until you ask, until you demand, things don't really come your way. I think it is a little bit of romanticizing the PI, [to think] that some PIs if they had the money would be generous. But not all PIs are like that. And I think also to a certain degree, some PIs are very much like, "I had to go through this and so I have to give you tough love and have you go

> through this too." But I think it's a different time and a different situation. I think we all wish it wouldn't have to come to that, but realistically you don't have the collective bargaining capacity without the union.

The organizers regretted that the dynamics between the university and the postdoctoral community called for the unionization of postdoctoral employees, wistfully wishing that the UC administration had implemented such rights and protections on their own. But given the history of the postdoctoral workforce at the UC, and how for years their issues had largely been ignored, unionization seemed the only viable alternative for sustained postdoctoral advancement.

Discussion

University leaders seeking to maximize the productivity of the university's workforce while minimizing employee costs often bring to labor conversations attitudes and norms associated with a culture of academic exceptionalism. This longstanding trope suggests that the university more or less should be viewed as a collegium—a community of equals wherein everyone looks out for the best interests of the organization, given that everyone shares in the success of the overall academic enterprise. The collegium is a benevolent organization seeking the best for all members of the academic community. Unionization and collective bargaining in turn are seen as an affront to the collegiality of the university. Indeed, they may even be blamed for destroying the academic community by bringing a "shop floor" mentality to the university. But such an ivory tower view of the university harkens back to a university– if collegiality exists, it may only exist or some and not for others (Santos, 2006). The collegiality that is so fondly called to mind, when convenient, raises the specter of a more democratic university that never was; the university has always offered special benefits for some, a privileged few, and not for others. Seen in this light, the unionization movement among postdoctoral workers is one more challenge to the myth of university exceptionalism.

But exceptionalism is not the only barrier to be challenged by union organizing. Perhaps an even larger obstacle is the growing influence of a neoliberal-driven corporate model of the university, one that increasingly sees the university as a business enterprise, and hence, must effectively and efficiently manage its resources, including the people who produce its intellectual products (Cantwell, 2009, 2011; Cantwell & Lee, 2010; Rhoades, 1998; Rhoads & Rhoades, 2005; Santos, 2006; Slaughter & Rhoades, 2004). Under the norms of the new managerial-

ism (Deem, 1998, 2001; Levin, 2007), and rooted in ideals consistent with neoliberal ideology, postdoctoral workers are a managed resource to be maximized if the university is to operate its knowledge-generating mission at the most efficient levels. This necessitates minimizing employee costs, particularly among those groups of employees lacking organizational leverage. Although a handful of star professors may be able to command high salaries and great benefits, given their important role relative to the production of research-related revenue, this generally is not the case for postdoctoral workers or even the vast majority of tenure-track faculty (Rhoades, 1998; Stephan, 2011, 2012). In an environment that permits only a handful of stars to realistically influence the key terms of their employment, what other choice do intellectual workers such as postdoctoral employees have but to organize collectively, especially when neoliberal ideals and norms support their positioning as commodities to be managed?

The corporatization of the modern U.S. research university, including its emphasis on the management of intellectuals and their byproducts, suggests the need for marginalized knowledge workers to engage in collective bargaining as a means to advance their own interests, and potentially their own version of what the university could be (Rhoads & Rhoades, 2005). This seems especially true for postdoctoral employees who exist for the most part in a rather vulnerable position within the university's knowledge production process and hierarchy. Furthermore, the Emerging Global Model of the university, that to a great extent resembles the U.S. research university, as Morhman, Ma, and Baker (2008) posited, offers further concerns. For example, the focus of such universities on worldwide recruitment, something obviously front and center at the UC, at least in terms of hiring postdoctoral workers, raises concerns about such populations of employees. Given the vulnerability of all postdoctoral workers, but especially those who are international, the unionization of postdoctoral workers appears as a reasonable strategy for addressing the changing context of the U.S. research university.

If we are to believe the narratives shared by the union organizers highlighted in this study, the working conditions experienced by UC postdoctoral workers prior to unionization were best characterized by their vulnerability. A female postdoctoral worker, after sharing news of her pregnancy to an administrator, is advised that it might be wise to look for a new position. An international postdoctoral worker conceals important concerns about a research project out of fear of rocking the boat and possibly losing his visa, given his PI's agitation over previous input. These examples, and many others, certainly point to the need for some form of collective representation.

The unionization drive and the eventual collective bargaining agreement met serious resistance from the UC administration. Union organizers described many university-erected barriers, including insults in which postdoctoral workers were likened to students, and in the case of one PI, were compared to chickens needing to be incubated in a lab. In another instance, a UC bargaining team member likened the university to an African lion that had a right to its kill—the kill being the distribution of resources. But union organizers endured and their ultimate achievement was the first collective bargaining agreement for UC postdoctoral workers that, although far from a complete victory, surely gained ground for postdoctoral workers in terms of strengthening their salary and benefits and reducing to some extent their workplace vulnerability. Their unionization journey in this sense is similar to other unionized academic workers who experienced better working conditions and benefits post unionization (Birnbaum, 1976; Rees, 1993; Rhoades, 1998; Rhoades & Rhoads, 2003; Rhoads & Rhoades, 2005). Regrettably, however, the postdoctoral organizers interviewed for this project generally concluded that the university system is simply not structured for the long-term interest of the postdoctoral community; they felt that their interests do not appear to be a major concern of the UC administrative agenda. Though postdoctoral employees are in fact part of the thriving UC academic community, the organizers perceived the rights and benefits negotiated in the contract as mostly "costs" in terms of what it meant to the UC bargaining committee.

Regardless of whether postdoctoral workers unionize or not, universities should have policies in place that uphold certain standards independent of a union contract, as it is in the university's interest and fitting of its moral obligation to care for its workforce. We believe it is possible to develop and implement policies that help to alleviate the conditions of postdoc workplace vulnerability through a variety of mechanisms. For example, research universities and academic units could be more proactive in addressing some of the difficulties typically faced by postdocs. A reasonable and fair salary structure could be adopted. Clear policies regarding vacations and leave time could help to demystify any confusion about postdoc benefits. Taking time to have a child should not result in losing one's postdoc support; accordingly, universities and academic units need to develop fair and reasonable policies for family leave time. Postdocs should not be at the beck and call of their PIs and some reasonable norms around workload and work-related expectations should be put in place. Finally, universities need to give serious consideration to how to develop and implement supportive procedures for work-related grievances. Such grievance procedures

need to attend to the special needs and circumstances of international postdocs is especially important in light of their common concern over losing their visa.

Another important set of policy implications is to look at the sources of funding—namely, federal agencies such as the NSF and NIH, among others—and examine the mechanisms they might put in place to support improved workplace environments for postdoctoral workers. One obvious and perhaps significant area where improvement could be made is for such agencies to develop precise guidelines for supporting postdocs, while at the same time adopting policies to assure compliance on the part of universities and their PIs. Such policies might include minimal salary standards, reasonable workload expectations, and guides for granting proper credit for postdoc contributions to various publications and research innovations. RFPs could potentially include a requirement of prospective PIs to formalize the role and support structure for postdocs working on a particular funded project. Approval of grants could require this language as well as specific measures and evaluation processes for assessing the PIs effectiveness in addressing postdoc needs. Professors are evaluated on a regular basis by undergraduate and graduate students enrolling in their courses, so why not expect the same from PIs supervising postdocs in a laboratory, given the developmental role such a position ought to entail? These and other policies ought to be considered in light of the mounting evidence demonstrating the difficult circumstances under which many postdocs work (Cantwell, 2009, 2011; Cantwell & Lee, 2010).

Conclusion

The findings and discussion highlighted in this article point to the growing relevance of unionizing intellectual workers in the context of an increasingly corporatized university enterprise. Although the primary concern identified in this article involves UC postdoctoral employees and their working conditions, the evolving neoliberal context of the modern research university may necessitate the unionization of other intellectual workers in the future, including the possibility of collectively enhancing the working conditions of the vast majority of faculty who fail to achieve star status and the inability to set the conditions of their employment. In this regard, as was the case with graduate student employees and adjunct faculty before them, the case of UC postdoctoral workers and successful unionization paves the way for expanded considerations of the role of unions in the working lives of intellectual workers.

References

America COMPETES Act (ACA). (2007). Public law no: 110–69. *Congressional Record,* H9414–9465. Washington, DC*:* Government Printing Office Section, 1105.

Aronowitz, S. (2000). *The knowledge factory: Dismantling the corporate university and creating true higher education.* Boston: Beacon Press

Bender, D. E., & Kinkela, D. (2001). Thirty years of academic labor: The language of anti-unionism. *Radical History Review, 79,* 7–13.

Benderly, B. (2004, May). A union contract aimed at preserving the postdoc experience. *Science: Career Magazine*. Retrieved from http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2004_04_02/nodoi.14612983865409630620

Berry, J. (2005). *Reclaiming the ivory tower: Organizing adjuncts to change higher education.* New York: Monthly Review Press.

Birnbaum, R. (1976). Unionization and faculty compensation: Part II. *Educational Record, 57,* 116–138.

Black, G. C., & Stephan, P. E. (2010). The economics of university science and the role of foreign graduate students and postdoctoral scholars. In Clotfelter, C.T. (Ed.), *American Universities in Global Market* (pp.129–161)*.* Chicago: University of Chicago Press.

Boron, A. A. (2006). Reforming the reforms: Transformation and crisis in Latin American and Caribbean universities. In R. A. Rhoads & C. A. Torres (Eds.), *The university, state, and market: The political economy of globalization in the Americas* (pp. 141–163). Stanford, CA: Stanford University Press.

Boron, A. A., & Torres, C. A. (1996). The impact of neoliberal restructuring on education and poverty in Latin America. *The Alberta Journal of Educational Research, 42*(2), 102–114.

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development.* Thousand Oaks, CA: Sage.

Bracey, G. W. (2008). On the shortages of scientists and engineers. *The Phi Delta Kappan, 89*(7), 536–538.

Cantwell, B. (2009). *International postdocs: Educational migration and academic production in a global market* (Unpublished doctoral dissertation), University of Arizona, Tucson. (UMI:3352591).

Cantwell, B. (2011). Academic in-sourcing: International postdoctoral employment and new modes of academic production. *Journal of Higher Education Policy and Management, 33*(2), 101–114.

Cantwell, B., & Lee, J. J. (2010). Unseen workers in the academic factory: Perceptions of neoracism among international postdocs in the United States and the United Kingdom. *Harvard Educational Review, 80*(4), 490–516.

Chomsky, N. (1999). *Profit over people: Neoliberalism and global order.* New York: Seven Stories Press.

Clark, B. R. (1998). *Creating entrepreneurial universities: Organizational pathways of transformation*. Oxford, UK: Pergamon Press.

Clark, B. R. (2004). *Sustaining change in universities: Continuities in case studies and concepts*. Berkshire, UK: SRHE & Open University Press.

Creswell, J.W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: SAGE Publications

Deem, R. (1998). New managerialism and higher education: The management of performances and cultures in universities in the United Kingdom. *International Studies in Sociology of Education, 8*(1), 47–70.

Deem, R. (2001). Globalisation, new managerialism, academic capitalism and entreprenuerialism in universities: Is the local dimension still important? *Comparative Education, 37*(1), 7–20.

Des Jarlais, C. (2012, March). Unionization: Is it enhancing the postdoc experience? [PowerPoint document]. *Perspectives on the Interactions between University Administrators, Principal Investigators, and Postdoctoral Scholars*. Symposium conducted at the meeting of the Committee on Science, Engineering, and Public Policy, Washington, DC.

Freeman, R. B., & Medoff, J. L. (1979). The two faces of unionism. *The Public Interest, 57,* 69–93.

Geiger, R. L. (1986). *To advance knowledge: The growth of American research universities, 1900–1940.* New York: Oxford University Press.

Geiger, R. L. (1993). *Research and relevant knowledge: American research universities since World War II.* New York: Oxford University Press.

Giroux, H. A. (2002). Neoliberalism, corporate culture, and the promise of higher education: The university as a democratic public sphere." *Harvard Educational Review, 72*(4), 425–464.

Gumport, P. (2000). Academic restructuring: Organizational change and institutional imperatives. *Higher Education, 39,* 67–91.

Hall, S. & Jacques, M. (1990). *New times: The changing face of politics in the 1990s.* Baltimore: The Johns Hopkins University Press.

Hoffer, T., Grigorian, K., & Hedberg, E. (2008). *Postdoc participation of science, engineering, and health doctoral recipients.* NSF Intro Brief (No. NSF 08–307). Washington, DC: National Science Foundation.

Jones, S. R., Torres, V., & Arminio, J. (2006). *Negotiating the complexities of qualitative research in higher education.* New York: Routledge.

Julius, D., & Gumport, P. (2003). Graduate student unionization: Catalysts and consequences. *The Review of Higher Education, 26*(2), 187–216.

Lafer, G. (2003). Graduate student unions: Organizing in a changed academic economy. *Labor Studies Journal, 28*(2), 25–43.

Lee, J. J., Oseguera, L., Kim, K. A., Fann, A., Davis, T., & Rhoads, R. A. (2004). Tangles in the tapestry: Cultural barriers to graduate student unionization. *The Journal of Higher Education, 75*(3), 340–361.

Levin, J. (2007). Multiple judgments: Institutional context and part-time faculty. In R. Wagoner (Ed.), *The current landscape and changing perspectives of part-time faculty* (pp. 15–20). San Francisco: Jossey-Bass.

Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation." In D. D. Williams (Ed.), *Naturalistic evaluation* (pp. 73–84). New Directions for Program Evaluation, No 30. San Francisco: Jossey-Bass.

Lowell, B. L., & Salzman, H. (2007). Into the eye of the storm: Assessing the evidence on science and engineering education, quality, and workforce demand (research report for The Urban Institute). Washington, DC: The Urban Institute.

Marginson, S., & Considine, M. (2000). *The enterprise university: Power, governance, and reinvention in Australia.* Cambridge, UK: Cambridge University Press.

Medoff, J. L. (1979). Layoffs and alternatives under trade unions in U.S. manufacturing. *The American Economic Review, 69*(3), 380–395.

Mohrman, K., Ma, W., & Baker, D. (2008). The research university in transition: The emerging global model. *Higher Education Policy, 21,* 5–27.

Morrow, R. A., & Torres, C. A. (2000). The state, globalization, and educational policy. In Burbules, N.C., Torres, C.A. (Eds.), *Globalization and Education: Critical perspectives,* (pp. 27–56). New York: Routledge.

National Institute of Health (NIH). (2002). *National research service award stipend increase and other budgetary changes effective for fiscal year 2002*. Retrieved from http://grants.nih.gov/grants/guide/notice-files/not-od-02–028.html

National Institute of Health (NIH). (2012). *Ruth L. Kirschstein national research service award stipends, tuition/fees and other budgetary levels effective for fiscal year 2012*. Retrieved form http://grants.nih.gov/grants/guide/notice-files/not-od-12–033.html

National Postdoctoral Association (NPA). (2005). *Recommendations for postdoctoral policies and Practices*. Retrieved from http://www.nationalpostdoc.org/images/stories/Documents /PolicyDocuments/npa

National Postdoctoral Association (NPA). (2009). *What is a postdoc?* Retrieved from http://www.nationalpostdoc.org/index.php/policy-22/what-is-a-postdoc

National Research Council (NRC). (1969). *The invisible university: Postdoctoral education in the United States.* Washington, DC: National Academy of Sciences.

National Research Council (NRC). (2000). *Enhancing the postdoctoral experience for scientists and engineers.* Washington DC: National Academy of Sciences.

National Science Board (NSB). (2008). *Science and Engineering Indicators.* Arlington, CA: National Science Foundation. Retrieved from htt://www.nsf.gov/statistics/seind10/

National Science Foundation (NSF). (2008*). Science and engineering indicators.* Washington, DC: National Science Foundation.

National Science Foundation (NSF). (2010). *NSF-NIH survey of graduate students and postdoctorates*. Retrieved from http://www.nsf.gov/statistics/nsf13314/pdf/tab21.pdf

Nelson, C. (1997). *Will teach for food.* Minneapolis: The University of Minnesota Press.

Reed, A. & Micoli, K. (2005, June). Postdocs at the tipping point. *Science*. Retrieved from http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2005_06_03/nodoi.8474427838476872315

Rees, D. I. (1993). The effect of unionization on faculty salaries and compensation: Estimates from the 1980s. *Journal of Labor Research, 14*(4), 399–422.

Regets, M. C. (1998). Has the use of postdocs changed? (Issue Brief from the National Science Foundation Division of Science Resources Studies). Washington, DC: National Science Foundation.

Rhoades, G. (1998). *Managed professionals*. Albany: State University of New York Press.

Rhoades, G., & Rhoads, R. A. (2003). The public discourse of U.S. graduate employee unions: Social movement identities, ideologies, and strategies. *The Review of Higher Education, 26*(2), 163–186.

Rhoads, R. A. (2003). Globalization and resistance in the United States and Mexico: The global Potemkin village. *Higher Education, 45*(2)*,* 223–250.

Rhoads, R. A. (2011). The U.S. research university as a global model: Some fundamental problems to consider." *InterActions, 7*(2) Retrieved from https://escholarship.org/uc/item/8b91s24r

Rhoads, R. A., & Chang, Y. (2011) "美国创业型研究型大学存在的问题及其对中国高等教育的启示" ("Meiguo Chuangyexing Yanjiuxing Daxue Cunzai de Wenti jiqi dui Zhongguo Gaodeng Jiaoyu de Qishi"; "Concerns about the American Entrepreneurial Research University and Policy Considerations for Chinese Higher Education"). *Journal of Higher Education (China), 32*(8), 16–25.

Rhoads, R. A., & Rhoades, G. (2005). Graduate employee unionization as symbol of and challenge to the corporatization of U.S. research universities. *The Journal of Higher Education, 76*(3), 243–275.

Rhoads, R. A., & Torres, C. A. (Eds.). (2006). *The university, state, and market: The political economy of globalization in the Americas.* Stanford, CA: Stanford University Press.

Santos, B. (2006). The university in the 21st century: Toward a democratic and emancipatory university reform. In R. A. Rhoads & C. A. Torres (Eds.), *The university, state, and market: The political economy of globalization in the Americas* (pp. 60–100). Stanford, CA: Stanford University Press.

Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state and higher education.* Baltimore: Johns Hopkins University Press.

Stephan, P. E. (2011, September). *Job market effects on scientific productivity*. Paper presented at the First World Conference on the Future of Science. Retrieved from http://www.cso.edu/upload/PDF_rencontres/SEM_ES_Paula-Stephan.pdf

Stephan, P. E. (2012). *How economics shapes science.* Cambridge, MA: Harvard University Press.

Stephan, P. E., Black, G., & Chang, T. (2007). The small size of the small scale market: The early-stage labor for highly skilled nanotechnology workers. *Research Policy, 36*(6), 887–892.

Teitelbaum, M. S. (2003). Do we need more scientists? *The Public Interest* (Fall), 40–53.

Tuna, C. (2010, 12 August). Postdoctoral researchers in California ratify labor deal. *Wall Street Journal*. Retrieved from http://online.wsj.com/article

United Automobile Workers (UAW). (2010). 6*,500 University of California postdoctoral researchers ratify inaugural contract (a document of the UAW International Solidarity House)*. Retrieved from http://www.uaw.org/articles/6500-university-california-post-doctoral-researchers-ratify-inaugural-contract

United Automobile Workers (UAW). (2011). *Know your rights: Contract (a document of the UAW Local 5810)*. Retrieved from http://uaw5810.0rg/?page_id=85

United Automobile Workers (UAW). (2012a). *About the union (a document of the UAW Local 2865)*. Retrieved from http://www.uaw2865.0rg/about/history/

United Automobile Workers (UAW). (2012b). *About your union (a document of the UAW Local 5810).* Retrieved from http://uaw5810.0rg/?page_id=2625

United Automobile Workers (UAW). (2012c). Statewide department numbers report. 05–17 (a document of the UAW Local 5810 unpublished raw data).

University of California Council of Postdoctoral Scholars (UCCPS). (2006). *UCCPS Constitution*. Retrieved from http://www.ucpostdoc.org/constitution

University of California Council of Postdoctoral Scholars (UCCPS). (2010). *Appointment and promotion: Postdoctoral scholars (APM-390)*. Retrieved from http://www.ucpostdoc.org/files/apm-390.pdf

University of California Office of the President (UCOP). (2011). *Demographics of the postdoctoral scholars unit (PX) (a document of the UC Human Resources and Benefits)*. Retreived from http://atyourservice.ucop.edu/employees/policies_employee_labor_relations/collective_bargaining_units/post_docs/demographics.html

University of California Office of the President (UCOP). (2012). *Labor relations and collective bargaining (a document of the UC Human Resources and Benefits)*. Retrieved fromhttp://atyourservice.ucop.edu/employees/policies_employee_labor_relations/labor_relations.html

University of California, San Francisco (UCSF). (2011). *History of postdocs at UCSF (a document of the Office of Postdoctoral Affairs, UCFS Graduate Division)*. Retrieved from http://graduate.ucsf.edu/postdoctoral/history-postdocs-ucsf

United States House of Representatives. (2010). Understanding problems in first contract negotiations: Postdoctoral scholar bargaining at the University of California (Field Hearing before the Committee on Education and Labor, Serial No. 111–59). Washington, DC: U.S. Government Printing Office.

Wasem, R. E. (2012). Immigration of foreign nationals with science, technology, engineering, and mathematics (stem) degrees. *Congressional Research Service Report for Congress,* no: R42530. Retrieved from http://www.fas.org/sgp/crs/misc/R42530.pdf

Washburn, J. (2005). *University inc.: The corporate corruption of higher education.* New York: Basic Books.

Yates, M. D. (2009). *Why unions matter* (2nd ed.). New York: Monthly Review Press

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage.

Zumeta, W. (1985). *Extending the educational ladder: The changing quality and value of postdoctoral study.* Lexington, MA: Lexington Books.