

ORGANIZATIONS, OCCUPATIONS
AND THE STRUCTURATION OF WORK

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ABSTRACT

Since the late 1950s and early 1960s, the study of organizations and occupations, although linked, in principle, as subfields, have become, in practice, increasingly disconnected. Organizational theory has tended to concentrate on higher level theorizing about the design and operation of governance structures while research on occupations has continued to be informed by more contextually sensitive investigations of occupational interaction in concrete work situations. Drawing on a study of how resource recycling practices spread across colleges and universities, we argue for re-uniting the study of occupations and organizations through a focus on what we call the structuration of work. We track how the rationalization of recycling practices through system wide social movements and professional associations enabled the emergence of a new occupation of recycling coordinators in the field of higher education. We use the case of resource recycling in colleges and universities to illustrate how field-level processes and lower-level occupational actions in organizations are mutually constitutive and shape the social organization of work.

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After World War II, the sociology of work was divided into two sub-fields, the sociology of management and organizations and the sociology of occupations (Barley 1996; Hirsch 1985; see Zald 1971 for an exception). Conceptually the sociology of organizations has been dominated by *structuralist* approaches that have relied on large scale statistical analyses of populations and communities of organizations (Blau 1970; Scott 1992). These structuralist approaches to the sociology of organizations have been linked (both implicitly and explicitly) to behavioral/intentional approaches such as rational choice sociology, theories of social exchange or industrial-organizational psychology that paid relatively little attention to the concrete activities performed or the interpretive schemas employed within organizations and organizational fields. All these approaches have relied on presuppositions about the status and efficacy of the professional managers who staffed bureaucracies and the relationship of these managers to the rest of the organization (Becker 1970; Dalton 1959).

The sociology of occupations, on the other hand, has been strongly influenced by the Hughesian/Chicago School tradition in the sociology of work (Abbott 1993; Caplow 1954; Hughes 1971; Strauss 1993). Rather than focusing on structure per se, these approaches focus on the routine patterns of interaction and the daily negotiations through which structure is produced and reproduced in everyday workplace settings (Becker 1982; Strauss *et al* 1964). In contrast to the sociology of organizations, this research has relied on ethnographic and case study methods to investigate the social processes and social contexts in which patterns of interaction emerge, are reproduced, and sometimes disappear. In highlighting local contexts and everyday interactions, however, these studies often neglect

serious examination of the more formalized practices and automated technologies so closely associated with rational management and the professions (Abbott 1988; Crozier 1964). As researchers in the sociology of science and technology have come to emphasize, these formalized practices and automated technologies provided the infrastructure for “action-at-a-distance” that is characteristic of activity among large organizations operating in complex organizational fields (Bowker & Star 1999; Latour 1987; Star & Ruhleder, 1996).

In this paper, we advocate for a reintegration of the sociology of organizations and the sociology of occupations that respects the contributions of both streams of research (see Barley & Tolbert 1991 for a similar argument). We argue that this synthesis can be enacted through analyses of the dynamic interplay between organizations and occupations in the context of everyday work. Understanding these dynamics requires close attention to both the heterogeneous practices that may be found in local workplaces and to the "centers" through which the more formalized practices and knowledge that are used to coordinate and control large-scale collective activities across interdependent workplaces are standardized and transmitted. We use the metaphor of structuration (Giddens 1984) to invoke a particular kind of analytical imagery that we think would be most fruitful in guiding such research. To illustrate our arguments, we examine how the occupation of recycling coordinator in large American universities emerged and, subsequently, came to operate as a point where widely-shared concerns about recycling required shifts in rationalization (Weber 1978) in order to be translated into a set of routine practices that could be integrated with extant college and university solid waste practices. We draw on a range of "structurationist" concepts such as field, practice, framing and entanglement

(Bourdieu 1977, 1990; Callon 1999; Powell & DiMaggio 1991; Scott 1994) to guide our empirical analysis.

THE STRUCTURATION OF WORK: AN APPROACH TO REINTEGRATING THE STUDY OF ORGANIZATIONS AND OCCUPATIONS

While the sociology of organizations and the sociology of occupations have evolved along separate trajectories, the seeds for a conceptual synthesis can be found in the contemporary research of scholars in both fields. Occupational sociologists have increasingly focused on how environmental forces having to do with technology (e.g. Barley 1996; Thomas 1994; Vallas 1993, 1998), labor (e.g. Milkman 1997), gender (e.g. Biggart 1989; Reskin & Padavic 1994), and entrepreneurial restructuring (e.g. Smith 1990) have shaped the interaction of distinct occupational groups within and across organizations. Similarly, organizational sociologists have been paying increasing attention to the dynamics of careers and occupations within and across organizations and organizational fields (e.g. Abolafia 1996; Baron & Bielby 1980; Bielby & Baron 1983, 1986; Carroll *et al* 1992; Cohen *et al* 1998; Haveman & Cohen 1994). Nonetheless, there remain theoretical and methodological barriers that have limited dialogue between students of organizations and students of occupations. Our aim in this paper is to highlight the value of synthesizing research foci across these two subfields as a starting point for further dialogue.

We believe that Giddens' (1984) concept of structuration provides a useful starting point for the integration of occupational and organizational studies (see Thomas, 1994 for an interesting application of structuration arguments). For Giddens, social structure and everyday social interaction are mutually

constitutive of each other. Social structure influences the direction of social interaction. In turn, social structure is reproduced (or changed) through on-going interaction. The image of structuration when applied to the phenomenon of work encourages attention to on-going activity within local worksites and across multiple, interconnected worksites. The influence of distinct occupational groupings with a distinct set of work practices and a definite place within some larger structure of occupations can clearly be felt within local worksites and can help account for some of the ways in which multiple worksites come to be interconnected. Similarly, the influence of the culture and structure of large organizations with their formal rules and procedures and their informal understandings is clearly felt within local worksites and helps to account for other ways in which multiple worksites come to be interconnected (Gouldner 1954; Stinchcombe 1959). Of particular interest for developing a structurationist approach are new "paradigms" and older but neglected paradigms in institutional sociology and the sociology of science and technology that are grounded in a structurationist imagery (e.g. Abbott 1997; Bourdieu 1977; Fine 1991, 1993; Latour 1993, 1999). These paradigms have provided valuable tools—both conceptual and methodological—for studying organizations, occupations and work from a structurationist perspective that go well beyond the basic tools outlined in Giddens' work (Giddens 1984, 1993).

These more elaborated structurationist paradigms can be readily contrasted to paradigms that rely on “undersocialized” models of action such as rational choice or “oversocialized” models of social structure such as structural-functionalism since they draw more on pragmatist and constructivist approaches to knowledge, structure and collective action (Clarke 1991; Granovetter 1985). This focus involves conceptualizations of boundaries, mobility, and networks that are much more open and

dynamic than the conceptualizations associated with either "undersocialized" or "oversocialized" paradigms. When applied to questions of research design, these paradigms rely on a more balanced and reciprocal approach to the use of qualitative and quantitative methods than is often found in more "mainstream" quantitatively or qualitatively oriented social research (Creswell 1994).

More specifically, these approaches combine an attention to the instrumental and symbolic practices of actors that comprise the everyday work of local "worlds" (e.g. laboratories, factories, or corporate offices) with a sensitivity to how these local activities come to be entangled in more "global" patterns of interaction. It is through the routine practices of actors operating in the context of identifiable occupations, organizations, industries and other systems of work that old patterns of interaction are reproduced and new patterns of interaction are constructed. Ultimately, pragmatist/constructivist approaches can be distinguished from conventional rational choice and structural-functional approaches by their emphasis on how "knowledge" is embodied in social action. "Knowledge" is not some disembodied "rational" or "functional" set of cognitions that diffuses easily from mind to mind, but is embodied in individual brains (or nervous systems or computers) that are both "rationally" and "functionally" bounded. The "knowledge" embodied in these individual brains is partly shared and partly differentiated from the "knowledge" embodied in other brains and allows individual people to comprehend and act in both the social and natural world (Star 1992; Weick 1979). We suggest that tracking the development of expert knowledge and specialized occupations, as part of rationalization processes, provides a key focal point for a structuration of work perspective.

Expert Knowledge and Rationalization Processes

Scholars who draw on structurationist frameworks argue that modern technologies and formal institutions are powerful precisely because they provide mechanisms by which collective activities can be conducted and coordinated over great distances while being adapted to fit local circumstances (e.g. Latour 1987; March & Olsen 1989; Stinchcombe 1983). Implicit in these arguments is a recognition that the evolution of occupations and organizations in fields lies somewhere between the poles of purposeful adaptation and natural selection. Stated somewhat differently, these approaches emphasize that the processes of routine production and exchange within a complex organizational field demand a great deal of on-going work in a number of dispersed but interconnected worksites. The conduct of this work cannot be readily separated from the concrete practices that specialized occupations develop to conduct their daily work or the manner in which these different specialized occupations are brought together and interact to accomplish particular tasks. From this perspective, questions about the fuzzy, porous and precarious nature of organizational fields, the contested nature of organizational and occupational boundaries within fields and the mobility of people, practices, and commodities within these fields become critical (Dacin *et al* 1999; Law 1992; Ventresca *et al* 1998).

Of particular interest for answering these sorts of questions is the role of "expert" occupations. Though studies that highlight the role of expert occupations have become more common, questions about how these expert occupations come to operate within specific organizational contexts and across evolving organizational fields have been much less investigated (but see Edelman 1990; Faulkner 1983; Heimer 1996; Kaghan 2000; Orr 1996). We suggest that extending research on specific expert occupations to the study of how the knowledgeable practice of these expert occupations comes to be incorporated into existing occupational systems and organizational fields is essential for answering

questions of this sort. The emergence and incorporation of expert occupations (responsible for knowledgeable performance of a particular collection of tasks) within a specific division of labor is a central mechanism for the production and reproduction of formal institutions and automated technologies within organizational fields (DiMaggio & Powell 1983; Strang & Meyer 1993). Thus, the emergence and consolidation of expert knowledge within a system of professions and specialized occupations is the central focus of what we term the structuration of work.

We believe studies of the structuration of work should account for both the "local" and "global" aspects of patterns of workplace interaction as they develop over time (see Stinchcombe 1983). These accounts must attend to the development and institutionalization of knowledgeable practices, the association of these practices with expert occupations and the shifting boundaries of social entities such as occupations and organizations within larger fields of activity. In this paper, we focus attention on both local and global knowledge constructions and flows as they relate to general processes of *rationalization* (Bendix 1977; Weber 1978; Stinchcombe 1986). Weberian ideas about bureaucracy and bureaucratic institutions have been a central thread in the development of management and organization theory (Perrow 1986; Scott 1992). Yet, curiously, the work that managers perform in concrete organizational settings has been relatively neglected as a topic of research (but see Jackal 1988; Morrill 1995). Furthermore (and equally curiously), though the work of doctors, lawyers, engineers, scientists and a number of other technical professions have been studied extensively in the sociology of occupations, the work of professional managers and the interaction of this work with that of other technical professionals has been relatively neglected. We believe that studying rationalization processes provides a perfect vehicle for exploring how a structurationist approach may help to illuminate

the interconnections between the formal structures of interest to students of management and organization and the professional work of interest to students of occupations.

In exploring how both the sociology of organizations and the sociology of occupations intersect in the study of rationalization processes, we emphasize some facets of Weber's work that are often overlooked. In particular we draw on the work of Kalberg (1980) to explore Weber's complex conception of rationality and its relation to social action. For Weber, rationalization processes operated through four distinct types of rationality (formal, substantive, practical and theoretical) that are implicated in all forms of social action including (but not restricted to) economic action.

Weber (1978: 85) defined *formal* rationality as "the extent of quantitative calculation or accounting which is technically possible and which is actually applied." Formal rationality most closely approximates notions of rationality used in rational choice theorizing in economics, political science and sociology (Brinton & Nee 1998; Callon 1999; Swedberg 1998). It invokes an imagery of independent agents who consciously evaluate choices and make decisions that optimize the agent's cost-benefit tabulations. Weber used the technology of capital accounting in commodity-producing corporations as an illustration of the kind of knowledge and process that facilitates formal rationality by enabling accurate profit calculations.

In sharp contrast to *formal* rationality where the focus was on simple means-ends calculations, Weber's concept of *substantive* rationality draws attention to how social action is shaped by ultimate values. These values may not be (and usually are not) fully calculable in the way that *formal* rationality requires. This tension between substantive and formal rationality becomes especially apparent when aspects of society that are considered sacred are profaned by equating their purported value to the

price that these "products" can bring in the course of commercial exchange (Douglas & Isherwood 1979; Espeland & Stevens 1998; Strathern 1999; Thomas 1991). Such tensions have been identified in the creation of labor markets (Marx 1964; Polanyi 1944), the development of money (Simmel 1978), efforts to establish commercialized blood banks (Titmuss 1971), the pricing of children (Zelizer 1994), and attempts to purchase tribal land (Espeland 1998).

Importantly, Weber did not simply equate formal rationality with "means-ends" rationality. Rather, he viewed formal rationality as a specialized sort of *practical* rationality that had particular importance for understanding modern Western societies. Like formal rationality, practical rationality is also concerned with means-end considerations. However, in contrast to formal rationality, practical rationality is not explicitly concerned with formalized procedures or techniques like accounting that could be used to guide (and regularize) economic action. Weber's concept of practical rationality, akin to Bourdieu's (1990) concept of habitus, is much closer to the concept of rationality found in ethnomethodology (Garfinkel 1967) or symbolic interactionism (Stryker 1980) in which actors draw on a variety of shared understandings to guide their everyday interactions. Of interest in this regard are the concrete ways in which formal techniques like accounting are integrated into everyday systems of interaction.

Where the concepts of formal, substantive and practical rationality emphasize people's relatively unreflective use of knowledge and value orientations in the course of social action, the concept of theoretical rationality emphasizes the ability of people to reflect on their knowledge and to interpret their own and others actions. That is, theoretical rationality is more concerned with the efforts of people to make sense of their lived experience. Theoretical rationality has much affinity with the concepts of

sensemaking (Weick 1995), rationalization of action (Giddens 1984) and double-loop learning (Argyris & Schon 1978) in which actors reflect on their own actions and the patterns of activity in which they are engaged as a way of providing a rationale for their past actions and building models for their future courses of action. In this sense, much philosophy and social science research may be seen as elaborate mechanisms for providing rational grounds for both substantive and formal rationality. For example, accounting research grounded in neo-classical principles might be seen as a form of theoretical rationality grounded in utilitarian/libertarian values that provided support for capitalistic forms of governance (Hollingsworth & Boyer 1997).

Though Weber argued that in modern economic systems (both capitalist and state socialist) that one type of rationality—formal rationality—had come to play an increasingly important role, he was careful to emphasize the importance of the three other types of rationality for understanding economic action within modern economic systems (Kalberg 1980). A fuller appreciation of Weber’s approach to rationalization processes provides an obvious bridge to structurationist perspectives by connecting to a variety of contemporary social theorists including Giddens. At the same time, structurationist approaches can usefully extend Weberian analyses of social process by focusing attention on the complex processes by which shifts in forms of rationality occur as well as how they overlap. Even though Weber did not spend a great deal of time studying processes of rationalization in penetrating detail, he did emphasize the importance of such dynamics. For instance, in one of his most famous passages, Weber (1978: 246-254) highlighted the rationalization dynamics involved in the *routinization of charisma* that focused on how leadership succession in religious groups may involve shifts from substantive to formal rationality.

We contend that occupational and organizational sociologists have a wonderful opportunity to extend Weber's insights about rationalization processes through the study of how organizations and occupations coevolve. In particular, we believe that the study of how expert occupations that claim jurisdiction over particular types of knowledge-based work through different types of rationality over time may provide crucial insights into how new kinds of work becomes systematically structured across a wide variety of organizational contexts. This will not only help to bridge the study of work and organizational fields, but also highlight the important yet underdeveloped connections between classical and contemporary social theory.

In the following section, we illustrate our argument by discussing the rationalization processes by which recycling, promoted as a sacred ideal by environmentalists in the late 1960s and early 1970s (Seldman 1986), was framed and entangled with other kinds of solid waste management processes in colleges and universities. All four types of rationality that Weber identified are evident in our approach to the structuration of recycling work. This case study demonstrates the work that goes on to harness and construct knowledge that justifies the boundaries and claims of emerging expert occupations that try to maintain and enhance their status within the broader occupational and organizational structure. We believe that the lessons provided by this case study can be extended to research on the dynamics of organizations and occupations more generally.

THE CASE OF RECYCLING PROGRAMS AT COLLEGES AND UNIVERSITIES

Our discussion and analysis of how recycling practices emerged in colleges and universities is

based on research that drew on both qualitative and quantitative methods. Qualitative research included in-depth interviews with over fifty physical plant employees who were responsible for managing university recycling programs, short-term field observations at several universities, and a systematic survey of 154 colleges and universities in the Great Lakes' states. The field-based methods were helpful in developing a "grounded" understanding of recycling programs and the daily work of recycling coordinators in a university setting (Becker 1997; Glaser & Strauss 1967; Schwartzman 1993). Other archival and survey research helped to further refine interpretations from fieldwork and situate that research within a broader historical and spatial framework.

In the late 1980s and early 1990s, institutionally sanctioned recycling programs were established across the vast majority of American universities. Out of 154 colleges and universities in the Great Lakes states surveyed, virtually all schools (151) had created a formal recycling program by 1995. However, there were important differences in how programs were structured. Particularly interesting was the fact that in 23% of the cases, schools created a new full-time position, *recycling coordinator*, to organize and manage their formal recycling programs. In the majority of cases (75% of schools surveyed), however, management responsibilities for newly adopted recycling programs were given to employees filling extant positions on the physical plant staff (such as custodial directors, grounds supervisors or assistant physical plant directors). These new recycling tasks were seen as additional duties that fell within the scope of these other, less specialized, positions.

Furthermore, these two kinds of role solutions were correlated with beliefs about recycling as well as the demographics of role occupants. The part-time recycling managers were more ecologically ambivalent, male and older. These "ambivalent" coordinators were longtime university employees who

tended to view recycling as either a nuisance or marginal work activity. The people who filled newly created full-time recycling coordinator positions were guided by a commitment to ecological values and tended to have had environmentally-related activist experiences, especially around issues of recycling. “Activist” coordinators included both men and women who were often much younger than their part-time recycling manager counterparts.

Quite clearly, two distinct (and competing) organizational and occupational responses to the new set of recycling tasks had been put in place within larger organizational and occupational fields. A structurationist perspective urges us to dig more deeply into this phenomenon. In particular, this perspective directs us to look in more detail at the ways in which recycling tasks were framed into concrete recycling practices and how these practices came to be entangled in the larger set of maintenance activities performed by universities. Part-time and full-time recycling employees clearly framed recycling in different ways and were entangled in different communities promoting different sorts of attitudes and different sorts of practices. Furthermore, these differences influenced the way in which these two groups attempted to entangle (i.e. incorporate) recycling practices into the existing maintenance practices of the colleges and universities in which they were employed.

We argue that as activist recycling coordinators gained experience with building recycling programs and coalesced into a field-wide occupational community, knowledge about how to "rationally" integrate recycling with extant solid waste practices had become more broadly accessible, diffusing across the field of higher education. We argue that this more complete rationalization and routinization of recycling practices has strongly influenced the ongoing dynamics of solid waste management occupations in the field of higher education. We also speculate that those processes have the potential

to undermine the status claims of the nascent recycling coordinator occupation.

The Heterogeneous Diffusion of Recycling Knowledge and Work Practices

The environmental movement of the 1960s and early 1970s aimed to challenge the profit- and pollution-making orientation of capitalistic governance forms (most particularly, large privately owned business corporations) through the development of environment-friendly practices such as resource recycling (Seldman 1995). Since the late 1980s, however, there has been a growing consensus that it is possible to engage in profit-making activity while simultaneously working to better the environment (Gladwin 1992; Hoffman 1997; Jennings & Zandbergen 1995). This has been particularly evidenced by the rise of *socially responsible investing* and the popularity of companies such as *Ben & Jerry's* and the *Body Shop* that explicitly tout their contributions to ecological sustainability (Cohen & Greenfield 1997; Hawkin 1993). This rhetorical shift, which has helped environmentalism become a mainstream American phenomenon (Gore 1992), has been associated with a shift from a climate dominated by concerns with values to a climate dominated by concerns with techniques and proper procedure. What is less well understood is how the processes of rationalization through which this shift in emphasis was accomplished actually worked. Structurationist approaches focus attention on how complex social interaction drives rationalization processes.

The creation of institutionally sanctioned recycling programs in the physical plants of higher education organizations provides insight into the processes by which substantive environmental values became incorporated into everyday work routines and well-accepted rationales for economic action via formal, practical and theoretical rationalization. While 3,000 non-profit, community recycling drop-off

centers were created in the first six months after Earth Day in 1970 (Seldman 1986), there was virtually no change in the overall rate of solid waste recovery from 1960 to 1980. By the 1990s, however, governmental and industry actors had sponsored for-profit recycling practices that had begun to proliferate throughout the nation, leading to dramatic increases in overall solid waste recovery rates (Environmental Protection Agency 1995). The Environmental Protection Agency (EPA) estimates that the number of recycling programs in the U.S. increased from approximately 1,000 in 1988 to 7,500 by 1995. Resource recycling had effectively been transformed from a peripheral activity promoted by "hippies" to a mainstream solid waste practice (Lounsbury *et al* 1998).

Colleges and universities began to respond to broader normative pressures that defined recycling as an appropriate and important part of solid waste management practices by the late 1980s. In grappling with how to incorporate such novel practices into a broader set of solid waste management practices, colleges and universities set in motion an interesting set of occupational dynamics. Since virtually the entire sample of 154 colleges and universities surveyed had created a formal, institutionally-sponsored recycling program, the problem to be explained was not whether a particular school created a program, but which kind of program. The main factor that explained whether a school created a new, full-time recycling coordinator position when establishing a recycling program was the existence of student activism on campus promoting the creation of such a program. Student activism, however, was not merely a local affair. Environmental activism on campus was encouraged and sponsored by national-level environmental social movement organizations such as the *Student Environmental Action Committee* (SEAC).

SEAC, established in 1989, claims to be the largest student-run organization in the U.S. with

members at over 2,200 universities, colleges, and high schools. They sponsor an annual student conference, and maintain an elaborate network of experienced student organizers who travel to campuses and hold workshops, provide training, and support work on activities such as campus solid waste audits. SEAC also claims to have helped create over 700 recycling programs at U.S. schools (Smith 1993: 127). Organizations such as SEAC have sponsored and disseminated various kinds of practical knowledge about how students should go about lobbying for the creation of a recycling program that would be supported and managed by the school administration.

One important technique that SEAC encouraged environmental student groups to employ on campuses was the “solid waste audit”. The solid waste audit is a standardized approach that can be used to study the waste composition of a university. It requires evaluating the kind and quantity of garbage that is produced around campus, often requiring the unpleasant task of climbing into dumpsters. To gather data for the audit, students are encouraged to collect garbage from a variety of dumpsters across campus and bring it to a common sorting site. At the sorting site, garbage is estimated for volume, weighed and categorized by whether a particular item can be recycled, and if so, what kind of recyclable material it is (paper, plastic, glass etc.). This kind of formal analysis then enables students to make systematic claims about the overall campus waste stream and estimate the costs and benefits of creating a recycling program.

When student environmental groups connected to organizations such as SEAC made their case to local administrations, they typically conducted a comprehensive solid waste audit and prepared a report that detailed how a recycling program could be organized in a cost-effective manner. The solid waste audit, therefore, served as a rational technique (i.e. as a particular kind of framing mechanism)

that helped students to translate their ecological values into an administrative language which administrators understood. In addition to solid waste audits, student environmental groups also included specific recommendations as to how the recycling program should be organized. For this, student environmental groups typically drew on model programs that had started earlier, such as the recycling program at the *University of Colorado at Boulder* (established in 1976). These model programs employed full-time managers who specialized on recycling tasks. Recycling programs such as the one at Boulder provided concrete examples that were well-known and much discussed by campus recyclers as embodying ideals that they sought to emulate.

In most cases where student environmental groups made such a case, colleges and universities created a new full-time recycling coordinator position, largely based on the effective claims and lobbying of student environmental groups. Further, many of these positions, when established, were filled with recently graduated seniors who were part of the effort to pressure the school into creating a recycling program. Hence, activist recycling coordinators emerged as a result of claims-making by student environmental groups that were armed with the support and knowledge of similar others that was diffused via a field-level social movement organization. At schools without active student environmental groups and with no meaningful connection to social movement organizations such as SEAC, schools created more minimalist recycling programs that were organized using extant university workers familiar with traditional solid waste practices but disconnected from this emerging set of recycling practices.

The Integration of Recycling into Solid Waste Management Practices

For schools that adopted the more minimalist form of recycling, recycling practices consisted of little more than a scattering of blue recycling bins around campus. Physical plant personnel did not value

recycling as a new technology and duty. Often, when custodial staff went to collect materials in recycling bins, these materials were mixed together with the regular trash to be hauled to the landfill. Hence, recycling was simply grafted onto existing work routines and structures.

This contrasted sharply with schools that created new full-time recycling coordinator positions staffed with ecological activists who experienced social marginality as part of their introduction into the workings of U.S. college and university physical plant departments (Lounsbury, 1997). This social marginality stemmed partly from the fact that recycling practices and the occupation of recycling coordinator lacked legitimacy across virtually all organizational contexts we examined. In addition, recycling coordinators were viewed as young idealists who had little practical work experience. It is true that since the majority of the newly hired recycling coordinators were recent college graduates, they had little experience working within a bureaucracy. In turn, these ecologically-activist workers had little social capital within their organizations and little understanding about how to pragmatically implement a new set of practices. Both their lack of social capital and their lack of understanding of how to pragmatically implement a new set of practices into a larger and more institutionalized set of practices were shortcomings that had to be addressed.

The social marginality of recycling coordinators was importantly shaped by the cultural organization of physical plant departments. Most physical plant departments are organized in a hierarchical and occupationally and demographically segregated fashion. Referring to how occupational specialization was correlated with demographic characteristics, one informant dramatically characterized her physical plant department as a “Southern plantation.” Having toured many physical plant departments, it became clear that, by and large, the managers and skilled trades tend to be dominated

by white males, secretaries were almost always women, and custodians, truck drivers and other maintenance workers tended to be black or ethnic men. While the “Southern plantation” imagery may be viewed as a hyperbole, the general contours of a traditional, white male bureaucracy seemed to be operating in the majority of circumstances.

This aspect of the organizational context was extremely problematic for many of the recycling coordinators we interviewed. Trying to start a recycling program involves not only the creation of an infrastructure for potential recyclables to be placed (e.g. blue bins), but also requires coordinators to work closely with custodians and truck drivers who collect discarded materials and transport them to a centralized holding facility. Gaining the trust of custodial staff was not an easy task for young, ecologically-minded coordinators. Further, in many cases, women coordinators noted and highlighted how they put up with sexist talk and had a great deal of difficulty being taken seriously.

For female recycling coordinators, gender discrimination by males was coupled with within gender status conflict. Most of the women in the physical plant were secretaries. Existing female staff who were secretaries viewed new recycling coordinators as higher status since they often had their own office and were separated from the rest of the female staff. In reality, recycling coordinators did not get paid more than secretaries, yet they were perceived by others to have higher level managerial duties.

Arguably, this lack of social capital exacerbated the relative inexperience of these newly-minted recycling coordinators within the organizational hierarchies that they found themselves in. As many interviews highlighted, even activist coordinators had to deal with senior physical plant administrators who were reluctant to provide resources for important activities such as the promotion of recycling on campus to build greater recycling awareness among campus users. To gain resources, recycling

coordinators had to somehow demonstrate success (often defined in the early stages of a program as the extent to which the campus population places potential recyclables in blue bins). But generating success required investing resources to create an infrastructure and promote the program. In the early stages of recycling programs, the difficulties involved with these "bootstrapping" efforts of recycling coordinators often seemed to compound feelings of social marginality.

While activist coordinators were marginalized locally, they did gain strength and resolve by realizing they were part of a nascent college and university recycling coordinator occupation that included many other, equally marginalized, coordinators at other campuses. This realization led to the establishment of the *College and University Recycling Coordinators* (CURC) occupational association (Lounsbury 1997). CURC was formed in 1993 during an annual *National Recycling Coalition* (NRC) meeting where a group of college and university recycling coordinators realized that there were a wide variety of similarly situated people struggling with the same issues having to do with building recycling programs. This group established procedures to elect officials and developed committees to study issues having to do with measurement standards, "buy recycled" campaigns, and cooperation between university operations and academics. The group also established a ListServ on the internet, called "Recyc-L", to facilitate ongoing program management dialogue among organization members. The chairperson of CURC expressed a common view among CURC members that their collaboration represented a step towards creating a recycling coordinator profession:

I see CURC and the List Server as the vehicle by which our profession will eventually be formally recognized. This will lead to standards and procedures that will assist in legitimizing and progressing our efforts and our ideas. It is the best way to promote and achieve inroads to business and affect their practice.

In addition, this new occupational community (Van Maanen & Barley 1984) provided a source

of social support and resources for ecologically-minded recycling coordinators to persevere amidst problems of legitimacy and social marginality at their local worksites. In particular, recycling coordinators made continuous efforts to formally rationalize recycling practices in an effort to gain social legitimacy. Specifically, while part-time recycling managers tended to view recycling as a marginal appendage to extant solid waste practices, activist recycling coordinators worked to efficiently organize and build the recycling program in an effort to make it a central element in a school's solid waste practices. CURC's mission reflects this orientation towards rationalization...

To facilitate information exchange between institutions of higher education regarding integrated waste management practices by providing technical training, making information about institutional recycling operations and methods easily accessible, and by creating linkages with academic resources.

In addition, their number one goal, supporting that mission, is to “develop reporting standards for measuring progress toward waste abatement and to allow for accurate comparisons and analyses between schools.” In interviews and discussions with full-time recycling coordinators affiliated with CURC, measurement issues were continually raised as crucial to the further development and growth of recycling practices and the recycling coordinator occupation. While recycling activists in the late 1960s and early 1970s justified their arguments about the existence of recycling by arguing that it was the right thing to do, 1990s recycling coordinators emphasized quantitative calculation, including a focus on monetary gains. For instance, Tim, a recycling coordinator at a large Midwestern institution argued that the expansion of his recycling program is justified because...

it will complement what we are presently doing, plus it will enable us to capture up to 200 tons of additional fibers and other material per month, generating \$400k to \$600k per year.

Even though recycling income generation is one useful measure of the productivity of a recycling program, there are many other kinds of measures that coordinators have also begun to systematically track. Joann, a recycling coordinator from a large Southwestern university, for instance, noted that she “measures the productivity of her program by amount (weight) of material recycled, the diversity of the materials recycled, as well as revenue generated through recycling.” Other kinds of measures mentioned included the comparative cost of recycling a ton versus landfilling a ton of material, the percentage of materials diverted from dumps, remaining within budget, customer satisfaction, custodial hours worked, and complaints from custodial staff. To develop standardized techniques of measurement and evaluation of recycling program productivity, CURC has organized a measurement standards committee that has created training tools and models that are widely available to recycling coordinators.

The creation and use of such quantitative techniques for monitoring efficiency and productivity has helped to make recycling a central element in the solid waste practices of universities. This progressive entanglement of once marginal recycling practices into a more comprehensive set of solid waste practices was importantly shaped by the practical, theoretical and formal aspects of rationalization. Clearly, in a practical sense, the development of measures that highlight the relative costs and benefits of hauling trash to dumps versus recycling has led to refinements in collection and management processes. But there have been important symbolic benefits as well. These measurements (and the groups responsible for these measurements) gain legitimacy because they conform to principles of management informed by formal and theoretical rationality. These various forms of rationalization were all important in reducing barriers to acceptance of new practices and new groups responsible for

these practices. As a result, other groups—such as university administrators—began to frame recycling in sensible ways and welcomed the progressive entanglement of recycling efforts into the broader responsibilities of physical plant management.

Interestingly, as recycling activities have become more deeply entangled with traditional trash collection and removal activities, recycling coordinators who were initially hired to focus on recycling exclusively, have begun to also gain responsibilities for the overall management of solid waste at colleges and universities. That is, ecologically activist coordinators are now accepted as an important component of their physical plant departments. These new duties include the management of custodial operations, trucks, and contracts with outside haulers. This broadening out of tasks associated with the recycling coordinator positions may, however, potentially undermine the autonomous status of the recycling coordinator occupation since it decreases the distinction between what the full-time recycling coordinators are doing and what other part-time recycling managers are doing.

In fact, over the course of the three years of research, while recycling coordinators were expanding the range of their duties, employees in the physical plants of other universities who were not in full-time recycling coordinator positions, began to take recycling practices more seriously. As part of this process, assistant physical plant directors began to take classes on the management of recycling programs and how to develop a more integrated set of solid waste practices through the *Association of Physical Plant Administrators of Universities and Colleges*. In addition, solid waste hauling companies also began to increasingly collect and haul recyclables, providing a single source solution to integrated waste management. These private waste management conglomerates, in turn, educate university personnel about the relative value of treating materials as trash versus recyclables and provide

productivity and cost-benefit statistics on those activities.

This progressive entanglement of the practices promoted by university recycling coordinators with the practices of private waste management conglomerates has further strengthened the rationalization process and tied activities within universities into broader solid waste management efforts. These broader solid waste management efforts can, in turn, be viewed as exercises in framing and entanglement at a broader scale in which university recycling and solid waste practices come to be coordinated with similar practices developed in other sorts of organizations operating in other societal sectors. These new trends have encouraged the development of a new way to structure solid waste practices at all colleges and universities along a similar model—*integrated waste management*. Importantly, this new form for structuring solid waste practices is not limited to colleges and universities. Rather, the emergence of rationalized integrated waste management practices is part of a much broader rationalization process that is informed by interactions among private solid waste actors, governmental agencies and environmental activists in the broader solid waste management field (Lounsbury *et al* 1998). Importantly, it is the conjunction of formal, practical, substantive and, increasingly, theoretical rationality in the rationalization process that has facilitated the consolidation of the organizational and occupational fields involved in integrated waste management.

The field-level interactions described certainly indicate some convergence in the ways in which recycling and solid waste work roles are structured. More pointedly, the successful framing of recycling programs and practices in terms of quantifiable solid waste practices seems to have facilitated this convergence. This may, in turn, potentially lead to the demise of the nascent recycling coordinator occupation as recycling practices become fully entangled with the routines of higher education

bureaucracies. This would be consistent with Giddens' (1984) view that discursive forms (in this case, Weberian rationalization) serve as both vehicles of transformation and reproduction. That is, while the formal rationalization of recycling practices enabled recycling coordinators to gain legitimacy, it may have also helped to level differences across schools between ecologically-committed recycling coordinators and ecologically-ambivalent solid waste managers. A more complete leveling, in turn, would ultimately lead to the reproduction of the bureaucratic structures of physical plant departments, albeit with a slightly modified repertoire of practices that includes resource recycling.

On the other hand, the demographic structure and beliefs of the people involved in this fluid and evolving set of solid waste practices remain heterogeneous. At schools that have full-time ecologically-minded recycling coordinators, there is clearly a stronger emphasis on recycling, the reduction of waste, and, more recently, campus ecology (Smith 1993). Hence, recycling coordinators who were initially marginalized, have not only gained legitimacy and taken over more mainstream solid waste management duties, but have also sought to actively expand their mandate to influence a broader array of campus practices that have environmental impacts.

In general, campus ecology has to do with analyzing and understanding the campus environment as an ecosystem. Campus ecology issues include the use and disposal of hazardous substances in labs, medical waste, wastewater and storm runoff, pest control, air quality, procurement policies (e.g. the purchase of recycled paper and other recycled materials) etc. To do this, recycling coordinators have become more involved in student environmental groups and have begun to work more closely with staff and faculty—particularly those who are affiliated with departments or fields of environmental science and environmental studies—who have formed workgroups that seek to address these broader issues

about how university practices affect the overall environment. At schools that lack ecologically-minded coordinators, debate and action about issues related to campus ecology are much more limited.

It would be interesting to observe, however, whether this variation in program structure and content continues, perhaps at a reduced level, or begins to erode as a new occupation of integrated waste managers emerges. This new occupation would presumably incorporate the new practices associated with a "transient" recycling coordinator occupation with the more traditional practices associated with trash collection and hauling management positions in colleges and universities. It is unclear whether issues of campus ecology, however, will be left out or become a part of what all physical plant solid waste managers do. Of course, it is also possible that the emergence of specialized recycling coordinators at some schools and not others has acted as an imprinting mechanism (Stinchcombe 1965) that will help us understand why some colleges and universities are more ecologically responsible than others.

DISCUSSION AND CONCLUSION

In this paper, we have argued for renewed attention to the combined study of occupations and organizations in concrete work contexts using an eclectic set of methodologies that allow one to explore both local and system-wide phenomena concurrently. More specifically, we have argued that understanding the changing structure of work over time requires greater understanding of how the knowledgeable practices of members of different occupations are knit together in specific organizational contexts. We have used structurationist imagery (Giddens 1984) as a guide to show how the study of

occupational and organizational dynamics may be usefully integrated. How knowledgeable practices are framed and progressively entangled in on-going work routines plays a crucial role in ever adapting patterns of workplace interaction. For example, in bureaucratic organizations where quantitative measurement of productivity and efficiency are routine expectations, the emergence of measurements and quantitative evaluation tools play an important part in how new tasks are framed so that they seem sensible and can be more readily combined with existing practices.

Studying the construction and flow of such practices related to rationalization draws attention to the social groups that are implicated in the structuration of work in organizations and fields. In the case of recycling practices, the emergence of the possibly transient position of recycling coordinator in colleges and universities helps to deepen our understanding of the way in which Weberian processes of rationalization are actually enacted. This sort of enactment is fully grounded in the sort of sensemaking and negotiating activities on which students of management and other occupations have focused much attention (Strauss 1978; Van Maanen & Barley 1984; Weick 1995). Further, it deepens our understanding of the occupational dynamics involved in earlier studies of technical, professional and management work. (For example, see Barley 1986, 1996; Blau 1955; Bowker 1994; Burns & Stalker 1961; Burawoy 1979; Crozier 1964; Dalton 1959; Fujimura 1996; Gouldner 1954; Kunda 1992; Latour 1996; Law 1994; Orr 1996; Selznick 1949; Smith 1990; Strauss *et al* 1964, Suchman 1987; Thomas 1994).

More specifically, our case of the heterogeneous diffusion of recycling practices in colleges and universities provides insight into both processes of rationalization as well as the dynamic interrelationships among forms of rationality (Weber 1978). Activist recycling coordinators in colleges

and universities clearly drew inspiration and energy from the *substantive rationality* of the broader environmental movement that has aimed to restructure extant processes of consumption associated with modern "utilitarian" forms of Western capitalism. However, it is equally clear that other forms of rationality became critical as attempts were made to embed recycling practices more completely into the social technologies of existing bureaucracies. The role of *formal rationality* was clearly evidenced in the development and use of formal quantitative techniques such as the solid waste audit that could lead to more methodical assessments of efficiency and productivity.

Theoretical rationality, often linked to procedures infused with the ideals of formal rationality, provided the broader cognitive architecture and justification for those formally rational procedures. Theoretical rationality, for instance, was present in the economic theories of cost-benefit assessment that informed the development of the solid waste audit. These broader theories, bound up in atomistic ontological assumptions about the nature of reality, provided the currency by which recycling activists needed to communicate with administrators of large educational bureaucracies. Claims rooted in morality alone were not acceptable. Finally, *practical rationality* was apparent throughout the case as both activist recycling coordinators and ecologically-ambivalent solid waste managers sought to pragmatically solve problems as they became salient. Localized decisions by activist recyclers to draw on formally rational techniques and the efforts of solid waste managers to seek training in how to efficiently build a recycling program provide two prominent examples of how individuals in particular contexts coped with situational exigencies. As our framework reveals, however, particular organizational contexts and exigencies were not completely unique, but shared many features with related worksites and bureaucracies that enabled generalized knowledge about recycling and solid

waste management to be effectively transmitted and used in a variety of locales.

In the spirit of developing a perspective on the structuration of work, it is important to emphasize that rationalization, and related processes such as institutionalization, should be studied as ongoing processes (Hughes 1971; Becker 1982; Tolbert & Zucker 1996). In our case, much of the impetus for developing standard measures, evaluative tools and methods for gathering data came from the perceived benefit of conforming to existing bureaucratic standards. Though the development of these measures may be related to an increase in "average" recycling productivity, there was a great deal of ambiguity over which measures were most appropriate. Further, it was unclear whether any sort of universal measurement system could be devised. As the duties of recycling coordinators are—as trends suggest—increasingly folded into more comprehensive integrated waste management positions, existing measurement tools will most likely continue to be modified. These sorts of issues require on-going research.

At a more general level, it is important to emphasize that the structurationist imagery that we advocate fits more readily with ideas of "pragmatic" actors with a variety of "substantive" values being entangled and disentangled in "formalized" networks of activity. In particular, it is important to recognize that this imagery is not the same as functionalist imagery in which "rational" or "non-deviant" actors are embedded in and constrained by a static social structure and material environment. In this structurationist view, human beings are always engaged in sensemaking activities that are influenced by concerns that are both formally and substantively rational. Processes of framing and entanglement—of which Weberian rationalization processes are one important variety—allow networks of activities to be both reproduced and reconfigured over time. These processes facilitate the "destruction" of old worlds

of work and the "construction" of new worlds of work. Co-evolving systems of organizations and occupations provide a natural laboratory in which to study how these processes unfold.

In sum, we believe that a focus on the construction and flow of knowledge and practices provides a useful starting point for those scholars interested in bridging the subfields of organizational and occupational sociology. For organizational sociologists, attention to the creation of new expert occupations—such as recycling coordinators or integrated waste managers—that become responsible for developing new sets of practices to respond to particular problems are important mechanisms that drive institutional change processes such as the reconfiguration of fields. While organizational institutionalists have stressed the role of professionals in driving institutional transformation, much could be gained by focusing more on how the multiplex relationships among organizations, work and knowledge are constructed "on the run" rather than being expressly analyzed and planned by powerful elites. For sociologists of work, attention to the broader institutional arrangements that enable action-at-a-distance provides an important way in which local interactions can be situated in a more global context. The main claim, however, is that the complementarity of concepts and methodologies of both should be combined in an effort to develop more comprehensive accounts of social change involving the structuration of work.

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