



Institutional complexity and the meaning of loose coupling: Connecting institutional sayings and (not) doings

Strategic Organization
2016, Vol. 14(4) 407–440
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sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/1476127016635481
soq.sagepub.com

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Abstract

An understanding of decoupling in complex institutional fields remains elusive. In such fields, a multiplicity of logics engenders many possible institutional intentions as well as the likelihood of the co-occurrence of decoupled and coupled practices. In this study, I adopt Weick's dialectical view of loose coupling and integrate it with theory on institutional logics and vocabularies of motive to posit that the meaning of the decoupling (and coupling) of practices when a formal program is adopted in a complex institutional field can be found in the connection(s) that the (de)couplings have with the various available institutional intentions for such adoptions. I used the fuzzy-set approach to comparative case analysis to explore this issue among 28 business facilities that adopted an environmental management system. I found very different systematic connections between the coupling and decoupling of expected environmental management system program practices and the multiple institutional intentions given for the environmental management system adoptions. Moreover, these connections showed that the decoupling of certain practices were pivotal to understanding the meaning of the program adoptions.

Keywords

corporate social responsibility, institutional theory, legitimacy, sustainability, case method, qualitative methods, qualitative comparative method (QCA)

The fears that organizational responses [to the pressures of modern environmentalism] are only symbolic are endemic—both in the research community ... and in the wider world

—Meyer (2002: xv)

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Decoupling is one of the main coping devices by which organizations navigate complex institutional fields (e.g. Aurini, 2006; Binder, 2007; Crilly et al., 2012; D'Aunno et al., 1991; Lok, 2010; see also Boxenbaum and Jonsson, 2008; Greenwood et al., 2011). As a form of loose coupling, decoupling occurs when organizations adopt a legitimating program or policy and at the same time fail to implement some or all of the requisite practices expected to go with the adoption, and it is typically used by organizations as a means of reconciling conflicting institutional demands (Meyer and Rowan, 1977). Since organizations “face institutional complexity whenever they confront incompatible prescriptions from multiple institutional logics” (Greenwood et al., 2011: 318), decoupling serves as a particularly viable response in such institutional fields. Moreover, decoupling is widely considered to be a strategic response by which organizations purposefully “avoid” conforming to institutional pressures by hiding “nonconformity behind a façade of acquiescence” (Oliver, 1991: 154). As such, it fits well with the extant strategic understanding of institutional complexity: the conflicting demands in such environments are imposed upon organizations by various institutional constituents that adhere to different institutional logics—thereby creating incompatible demands—but who nevertheless hold “material” and “symbolic” resources that are critical to the organizations’ operations and survival (e.g. Durand and Jourdan, 2012: 1296; Pache and Santos, 2010; Raaijmakers et al., 2015).

While this strategic view has provided great insight into how organizations may respond when confronted with varying levels of deliberate institutional pressure (see also Dhalla and Oliver, 2013; Quirke, 2013), it only tells part of the story. Because a strategic treatment of institutional complexity and decoupling “discounts the social-fact quality of institutions” (Goodrick and Salancik, 1996: 3), it deflects attention away from the likelihood that decoupling in the face of institutional complexity is not always deliberate or strategic (Greenwood et al., 2011). An understanding of what decoupling means in complex institutional environments has remained elusive, in other words, because a multiplicity of logics implies a multiplicity of intentions (Mills, 1940; Thornton et al., 2012), and thus it is not obvious what motivations underlay decoupling. Indeed, while evidence clearly suggests that decoupling may be used as a deliberate sociopolitical device in the face of shifting or competing logics (e.g. Fiss and Zajac, 2004, 2006; Westphal and Zajac, 1998, 2001), research also shows that it can be non-deliberate (e.g. Weaver et al., 1999), serve as a benign buffering mechanism (e.g. Meyer et al., 1981; Sastry et al., 2002), or be driven by motives such as one’s profession (Binder, 2007; Townley, 2002) or ideology (Tilcsik, 2010). Moreover, although the extant literature has tended to “assume that organizations *wittingly* manage their responses,” it is also possible that “organizations unwittingly respond” to multiple logics (Greenwood et al., 2011: 352; emphasis in original). Along these lines, previous research suggests that decoupled practices occur alongside coupled practices within organizations confronted with institutional complexity; decoupling may be a matter of “muddling through” (Crilly et al., 2012) or even appear to be “irrational” as organizations may implement inconsistent, even conflicting, practices to gain legitimacy in their attempt to satisfy competing logics (D'Aunno et al., 1991).

In short, when an institutional program is adopted in a complex institutional field, a concurrence of couplings and decouplings of the requisite program practices is likely and the (de)couplings may satisfy one or more of the available logics—or even none to the extent that the loose couplings are done non-deliberately or unwittingly. Although the inherent concern surrounding decoupling remains whether or not the organization is disconnecting its intentions and actions (Orton and Weick, 1990), observers of decoupling in complex institutional fields cannot assume that it is purely a means of avoidance—which, as the opening quote suggests, is typically the assumption in such fields—nor can they simply focus on one logic (i.e. intention) or another. Instead, a more problematized approach to decoupling is needed if we are to truly understand it as an organizational response to institutional complexity, a view that treats its meaning in such fields as a

puzzlement: what is the meaning of decoupling when it occurs in the midst of multiple possible logics—intentions—and when it co-occurs alongside coupling?

In this study, I adopt such a problematized approach to understanding decoupling by integrating Weick's "dialectical interpretation of loose coupling" (Orton and Weick, 1990: 205) with the literature on institutional logics and vocabularies of motive. Orton and Weick (1990) have argued that loose coupling conceptually involves both decoupling and coupling, and thus, methodologically, examining decoupling in and of itself is not that meaningful (see also Basu et al., 1999; Weick, 1976)¹; as Weick (1976) put it, "if one wishes to observe loose coupling, then he has to see both what is and is not being done" (p. 10). Weick (1976) has also suggested that because researchers of loose coupling typically have only one goal in mind, this serves as a "methodological trap" in which

the problem for the researcher is that he or she may simply have focused on the wrong goal. There may be other goals which fit that particular action better. Perhaps if the researcher were aware of them, then the action and intention would appear to be tightly coupled. (p. 10)

As I develop below, this dialectical view of loose coupling—that is, that both couplings and decouplings must be observed and considered in light of the multiple possible intentions that stand to give them meaning—when combined with the premise that the meaning of practices is defined by institutional logics (e.g. Friedland and Alford, 1991; Thornton et al., 2012) implies that the (de)coupling of expected institutional practices is only meaningful to the extent that the (de)coupling instantiates one of the available logic(s). This transforms the puzzle surrounding decoupling into the following research question: which, if any, of the multiple prevailing institutional logics in the field are instantiated by instances of (de)couplings?

I further build upon scholarship on institutional logics and vocabularies to posit that this question can be answered by examining the connections that the (de)couplings have to the various declared intentions given for the institutional program adoption. Because institutional logics prescribe "how to interpret organizational reality, what constitutes appropriate behavior, and how to succeed" (Thornton, 2004: 70), logics each have their own "vocabularies of motive" (Mills, 1940; see also Jones and Livne-Tarandach, 2008; Thornton et al., 2012) which reflect, and help constitute, the intentions underlying practices. As Loewenstein et al. (2012: 54) have argued, vocabularies are considered to be the "key building blocks in linking symbolic expressions and practices" within institutional logics, and thus, the meaning of actions can be gleaned by examining their connections to social actors' declared reasons for them (see also Mohr and Duquenne, 1997; Mohr and Guerra-Pearson, 2010). In short, this extant research suggests that organizations' espoused explanations for a program adoption necessarily are given within the available vocabularies of motive, and thus reflect the prevailing logics of the field, and can be used to infer the organization's "institutional intentions" for the program adoption.

To explore these issues, I conducted a comparative case study of 28 business facilities that adopted an environmental management system (EMS) using Qualitative Comparative Analysis (QCA; Ragin, 2000, 2008). The study context typifies a complex institutional field in which businesses experience a conflict at the cognitive-cultural level (Hoffman, 1999, 2001; Hoffman and Ventresca, 2002; Margolis and Walsh, 2003). Environmental protection by businesses has "reached the level of a cognitive institution" (Hoffman, 2001: 156) which stands in tension with the long-standing cognitive institutional pressure to maximize profitability. Moreover, while many fear that decoupling is a strategic form of deceit in this institutional field (e.g. Beder, 1998; Forbes and Jermier, 2002), decoupling has also been found to be a benign means of resolving indeterminacy (Hironaka and Schofer, 2002; Sastry et al., 2002) given the uncertainty and means-ends ambiguity

involved in addressing environmental concerns (Hoffman, 2001). The QCA approach was well suited for this study as it allowed me to investigate decoupling among the EMS adopters in a problematized manner by capturing the richness of the cases including the consideration of both the presence (i.e. coupling) and absence (i.e. decoupling) of key expected program practices. It also enabled me to unpack the alternative rationales given by the program adopters—which were found to represent the available alternative logics—and to conduct sufficiency analyses of whether and how the couplings and decouplings of the expected EMS program practices systematically connected to the various declared explanations for the adoptions.

Theoretical foundation

The prevailing sociopolitical or “symbolic management perspective” of decoupling (Westphal and Zajac, 1998: 128) suggests that a business may strategically “avoid” conforming to institutional demands by establishing “elaborate rational plans and procedures in response to institutional requirements in order to disguise the fact that they do not intend to implement them” (Oliver, 1991: 154; see also George et al., 2006; Pache and Santos, 2010). Or, as Scott (2001: 171) once put it, decoupling is typically thought to be the “organizational equivalent of ‘smoke and mirrors’” (see also Perrow, 1985). The accumulated evidence of studies on the decoupling of corporate governance practices suggests that businesses may announce the adoption of institutionally demanded programs (e.g. stock repurchase programs, long-term incentive programs for their CEOs, and governance reforms), fail to implement the expected program practices, and yet enjoy legitimacy from the institutional actors demanding the programs (e.g. positive shareholder reactions) (e.g. Fiss and Zajac, 2004, 2006; Westphal and Zajac, 1994, 1998, 2001; Zajac and Westphal, 2004).² As already outlined above, this symbolic management view of decoupling is also typically applied by observers—both academics and practitioners—in complex institutional fields, and this view is implicit to the widespread “fear” that businesses purposively decouple in the face of institutional demands for businesses’ ecological care (see Beder, 1998; Forbes and Jermier, 2002; Hoffman, 1999, 2001).

Despite this conventional treatment of decoupling as a strategic manipulative device, past scholarship has also recognized that decoupling in complex institutional fields may be a result of indeterminacy. For example, some previous studies on businesses’ responses to institutional pressures to protect the natural environment suggest that decoupling in this institutional field is a device by which businesses disconnect institutional and technical demands given the great technological uncertainty and means-end ambiguity in to how to fulfill the demands for environmental protection (Hironaka and Schofer, 2002; Sastry et al., 2002). This notion draws upon Meyer and Rowan’s seminal argument that institutional demands often conflict with technical ones and that loose coupling is considered to be a means through which organizations can build “gaps between their formal structures and actual work activities” and thereby adopt programs that conform to institutional rules but still attend to efficiency activities (Meyer and Rowan, 1977: 341; see also Thompson, 1967). Importantly, in this buffering view, decoupling is not conceived to necessarily be a manipulative or strategic device. As Meyer more recently reflected, the “argument was that decoupling routinely happens in good faith. And in general, this is often so extreme that participants are not really very conscious of decoupling—let alone manipulative about it” (cf. Zuckerman, 2004: 460; see also Meyer et al., 1981).

These two notions of decoupling clearly highlight that loose coupling is a likely organizational response in this complex institutional environment (cf. Greenwood et al., 2011), although they differ on whether or not decoupling is a manipulative device. As Orton and Weick (1990) have argued, however, both of these extant approaches to understanding decoupling are “unidimensional” in nature; they tend to see actions as if there is acquiescence versus avoidance—as though there is

either tight coupling or decoupling. Moreover, they tend to have a singular focus with respect to intentions. Indeed, while prior research on decoupling has often implicitly or explicitly invoked institutional logics in its theorizing, this extant work has examined contexts involving shifting dominant institutional logics with a focus toward the new dominant logic (e.g. Fiss and Zajac, 2004, 2006; Westphal and Zajac, 1998, 2001; Zajac and Westphal, 1995, 2004). Extant work that attributes businesses' decoupling of ecological programs to indeterminacy also emphasizes that while organizational leaders intend to fulfill certain institutional demands, environmental program adoptions and implemented practices are decoupled because adopters simply do not know how to make good on their intentions.

Yet, such a unidimensional view is ill-suited for understanding the meaning of decoupling in complex institutional environments given that such fields are embodied by a multiplicity of logics—that is, multiple intentions—that compete to guide action (e.g. Greenwood et al., 2011). This is certainly the case in the institutional field surrounding businesses' ecological care (Hoffman, 1999): US businesses' adoptions of ecological programs are undertaken in the midst of the societal-level tension between the community and market institutional logics (cf. Thornton et al., 2012), in which the goals of the logics are in conflict (i.e. environmental sustainability vs profit maximization, respectively) much more so than are the means (i.e. institutional rules) (cf. Pache and Santos, 2010), as the latter are often self-derived (e.g. We Care Program; King and Lenox, 2000) or formulated by an institutional body (e.g. ISO 14001 EMS standards; Bansal and Bogner, 2002). Many business managers thus experience this antimony on a cognitive level (Hoffman, 2001; Margolis and Walsh, 2003), and there is some evidence to suggest that businesses adopt ecological programs believing that such adoptions will help businesses fulfill the multiple logics guiding this institutional field (Bansal and Bogner, 2000). Indeed, Bansal and Roth's (2000) survey of companies that had adopted corporate ecological programs found that the firms in their sample "were characterized by mixed motivations" (p. 731), with three alternative "motivations" appearing to underlie their ecological responsiveness: "competitiveness" (i.e. "expected that their ecological responsiveness led to sustained advantage and hence improved their long-term profitability"; p. 724), "legitimation" (i.e. "directed toward complying with institutional norms and regulations"; p. 727), and "ecological responsibility" (i.e. "the ethical aspects of ecological responsibility, rather than the pragmatic, were emphasized"; p. 728).

As outlined above, I posit that Weick's dialectical approach to loose coupling—that both coupled and decoupled expected practices should be considered when a program is implemented, as must the alternative goals that stand to guide practices—when integrated with theory on institutional logics and vocabularies of motive provides a means by which the meaning of decoupling in complex institutional fields can be examined.

First, the meaning of practices is a function of the logic that substantiates them (Friedland and Alford, 1991; Thornton et al., 2012). As the following quote from Friedland (2002) well captures, the connection between practice and logic is essential to understanding the meaning of any body of practice (see also Thornton et al., 2012):

An institution's specificity is located in the cultural premises of its production, in its ontological substances and the practices by which they are performed. [...] Institutional analysis requires us to move beyond the linguistic model in which the referent does not signify. Social practice is both referent and signifier; it is an ontological performance. (p. 384)

Moreover, extant evidence suggests that the meaning of practices resides in their connection to prevailing logics (e.g. Greenwood et al., 2010; Lounsbury, 2007; Purdy and Gray, 2009; Thornton, 2002, 2004; Thornton and Ocasio, 1999; Zajac and Westphal, 2004). This is particularly pertinent

to understanding the meaning of practices in the face of multiple logics. While certain practices may instantiate multiple logics (Friedland and Alford, 1991)—and may have a different meaning under each logic—there must also be certain practices or patterns of practices that are consistent with one logic and not the other if there are to be boundaries to logics. Logics “delimit the boundaries of the substantive practices constituting” each particular logic in contexts where logics compete (Misangyi et al., 2008: 763).

If the coupling of expected practices is thought to be meaningful to the extent that it instantiates a particular logic driving the institutional program, then it follows that the same must be true for decoupled practices. The decoupling of expected program practices is meaningful only to the extent that this absence instantiates some alternative logic (cf. Weick, 1976: 10). The following assessment of corporate social responsibility (CSR) practices by *The Economist* illustrates this well:

Under pressure, big multinationals ask their critics to judge them by CSR criteria, and then, as the critics charge, mostly fail to follow through ... Does this give cause for concern? On the whole, no, for a simple reason. Capitalism does not need the fundamental reform that CSR advocates wish for. If CSR really were altering the bones behind the face of capitalism—sawing its jaws, removing its teeth and reducing its bite—that would be bad. (Crook, 2005: 3)

A second critical insight from the institutional logics literature is that vocabularies are the lynchpin between the mutually constitutive symbolic and material domains of institutional logics (Thornton et al., 2012). Institutional logics structure the vocabularies through which social actors “frame and make their activities meaningful to others” (Jones and Livne-Tarandach, 2008: 1093; Ocasio and Joseph, 2005; Suddaby and Greenwood, 2005; Thornton and Ocasio, 2008). Thus, vocabularies of motive stand at the nexus of meaning-making in institutional logics—they reflect the prevailing values and goals of the logic and their connection to practices imbues meaning (see Loewenstein et al., 2012). In other words, different institutional structures invoke “different *vocabularies of motive* appropriate to their respective behaviors [italics in original]” (Mills, 1940: 906), and thus, the invocation of particular institutional reasons to describe or explain particular practices or patterns of practices frames and infuses them with meaning (Loewenstein et al., 2012; Thornton et al., 2012). In short, institutional logics provide the explanations through which social actors make sense of, and articulate the reasons for, their actions—these explanations form the institutional intentions for the actions to which they are attached.

This institutional view of motives considers the link between motives and actions to be a constitutive, rather than a causal, relationship (see also Mohr and Duquenne, 1997; Mohr and Guerra-Pearson, 2010) and is thus quite different from the conventional treatment of motives as individual intentions driving behavior. As Mills (1940) has explained this,

Within the [institutional] perspective under consideration, the verbalized motive is not used as an index of something in the individual but *as a basis of inference for a typical vocabulary of motives of a situated action*. When we ask for the “real attitude” rather than the “opinion,” for the “real motive” rather than the “rationalization,” all we can meaningfully be asking for is the controlling speech form which was incipiently or overtly presented in the performed act or series of acts. There is no way to plumb behind verbalization into an individual and directly check our motive-mongering, but there is an empirical way in which we can guide and limit, in given historical situations, investigations of motives. That is by the construction of typical vocabularies of motives that are extant in types of situations and actions. Imputation of motives may be controlled by reference to the typical constellation of motives which are observed to be societally linked with classes of situated actions. (p. 909–910; emphasis in original)

Methodologically, this institutional view of motives implies that the meaning of actions can be inferred from an examination of their link to the various available vocabularies of motive that represent institutional intentions, as this connection thereby institutionally situates actions and provides meaning to them. It is also important to note that this implies that motives can be inferred from social actors' retrospective explanations (cf. Weick, 1995): "motives are accepted justifications for present, future, or *past* programs or acts" (Mills, 1940: 906; emphasis added). Indeed, the evidence from prior decoupling studies that organizational explanations surrounding the adoption of CEO incentive plans (i.e. human resource (HR) vs agency justification; Zajac and Westphal, 1995), stock repurchase plans (corporate vs agency logic; Zajac and Westphal, 2004), and alternative governance mechanisms (stakeholder orientation vs shareholder orientation; Fiss and Zajac, 2006) have shifted along with a shift in the dominant logic guiding the fields is consistent with this notion.

Based upon the foregoing insights, I conducted a comparative case study using the fuzzy-set approach to QCA (Ragin, 2000, 2008) to explore the meaning of decoupling (and coupling) among businesses that adopted an EMS.

Method

As already noted above, the use of QCA allowed me to unpack the complexity of the EMS program practice couplings and decouplings—I was able to capture and consider the simultaneity of the presence and absence of expected EMS practices—and then examine whether and how the presence (i.e. coupling) or absence (i.e. decoupling) of the EMS practices is sufficient for observing the declared intentions for the EMS program adoptions. While an in-depth explanation of the QCA methodology is not possible here, its central features as used for the present inquiry are briefly explained (see Ragin, 2000, 2008 for detailed explanations).

In brief, the QCA approach, like all qualitative comparative case methodologies, involves examining whether there are uniform or consistent connections between certain theoretical attributes and particular outcomes or conditions of interest. In QCA, such consistent connections are assessed through a sufficiency analysis of subset relations using Boolean logic and algebra: when the presence or absence of a particular theoretical attribute or combination of attributes is always accompanied by the condition of interest, they are *sufficient* for observing the condition of interest (Ragin, 2000, 2008). Although these systematic connections are typically treated as being causal—they are conventionally thought of as being between certain causal attributes and a particular outcome—sufficiency analysis can also be used to examine "other types of integral connections" between theoretical attributes and conditions of interest that are constitutive in nature (Ragin, 2006: 19; see also, Ragin, 2008: 13–20). Thus, this method is particularly well suited for what I set out to do here: use QCA to examine whether there were systematic connections between couplings and decouplings of expected EMS program practices (i.e. the theoretical attributes of the cases) and each of the various declared reasons for the EMS program adoption (i.e. the conditions of interest that situate the (de)couplings). In doing so, this approach enabled me to enact Mills' (1940) methodological suggestion that rather "than interpreting actions and language as external manifestations of subjective and deeper lying elements in individuals, the research task is the locating of particular types of action within typical frames of normative actions and socially situated clusters of motive (p. 913)."

While I further elaborate sufficiency analysis below, the methodological approach begins with the selection of the theoretically relevant cases and the coding of cases' fuzzy-set memberships in each of the theoretically relevant attributes and conditions of interest (see Greckhamer et al., 2008). Each of these steps is described next.

Case selection and data

Case selection in the set-theoretic approach involves purposive sampling (Fiss, 2009; Ragin, 2000), and I selected cases that all adopted a particular institutional ecological program: business facilities that adopted an ISO 14001 EMS. EMS adoptions well exemplify the institutional field surrounding US businesses' care for the natural environment and thus provide an excellent context for the present inquiry. US businesses are under pressure to adopt the voluntary EMS standards set by the ISO (ISO 14001): EMS adopters gain legitimacy among consumers and suppliers as well as increased regulatory flexibility (Andrews, 2003; Bansal and Bogner, 2002; Hillary, 2000; King et al., 2005; US EPA, 2006). Nevertheless, many have argued that EMS programs are too onerous a requirement for businesses given their costs (see Melnyk et al., 2003), while still others have suggested that such programs provide a "win-win situation" as they afford competitive, ecological, and legitimacy benefits (Bansal and Bogner, 2002: 272). Furthermore, EMS standards arose in response to a call by the United Nations (UN) for a greater corporate role in environmental protection and thus were designed to apply to all companies in all industries (Steger, 2000). As such, they tend to be characterized by elements found in previous research (e.g. Edelman, 1992) to make such programs ripe for decoupling: the outcomes of an EMS are not easily assessed; ISO 14001 EMS standards cover processes not performance (Melnyk et al., 2003); and EMS certification is voluntary and performed by unregulated third-party consultants (Bansal and Bogner, 2002) or by firms' self-certification (King et al., 2005). Given these features and lack of a clear relationship to environmental performance (Andrews, 2003; Melnyk et al., 2003; Steger, 2000), there is concern that EMS adoptions are simply "part of a green ceremonial façade" by US businesses (Forbes and Jermier, 2002: 206).

The sample and data used for this study were downloaded from the publicly available National Database on Environmental Management Systems (NDEMS), which contains data on EMS programs that were initially implemented during 1999–2000 by government and business facilities. The project was devised by a "multi-state working group" (MSWG)—primarily composed of officials from nearly a dozen US state environmental agencies and the US Environmental Protection Agency (EPA)—with the aim of understanding how ISO 14001 EMSs "affect the environmental, economic, and regulatory performance of organizations" (Andrews et al., 1999: 2). The NDEMS data were collected in real time by researchers from the University of North Carolina at Chapel Hill and the Environmental Law Institute, who worked on behalf of the MSWG and were sponsored by the US EPA, through the use of in-depth questionnaires inquiring about facilities' implementation of an array of EMS practices—via a baseline protocol (pre-implementation), EMS design and implementation protocol, and update protocols (post-implementation).³ Facilities also were asked about their "rationales" for adopting the EMS (for a more detailed description of the data collection process and protocol design, see Amarai et al., 1999). Given its rich practice data and inclusion of the rationales for the EMS adoptions, the NDEMS data are well suited for the current inquiry.

The facilities that participated in the NDEMS study did so voluntarily. Recruitment was handled by each of the participating states and US EPA, primarily through advertisements of the project in state business journals and environmental agency newsletters. Some states offered incentives for participation (i.e. publicity via agency publications, grants to help offset the cost of implementation, and "enforcement waivers" for non-criminal violations discovered during the data collection), whereas others offered no incentives, and while some states took all interested facilities, others excluded facilities with poor compliance records. All participating facilities received some form of technical assistance and training on the design and expectations involved in ISO 14001 EMSs. Although the original NDEMS research team was originally concerned that this recruitment

process may have yielded “better-than-average facilities” as participants (Andrews et al., 1999: 8)—and thus that positive environmental and compliance outcomes were more likely—the project findings were equivocal with respect to all three outcomes studied (i.e. environmental performance, economic performance, and regulatory compliance; see NDEMS Executive Summary; Andrews, 2003). These aspects of the NDEMS research design, however, present a rare but ideal setting in which to conduct my examination: to the extent that decoupling occurs, it would not seem to be a deliberate avoidance response. Moreover, decoupling is not likely to be “done unwittingly” as the training received increases the likelihood that ISO 14001 expectations were clearly understood among the facilities.

A total of 58 facilities provided baseline and EMS design data, of which 37 provided a detailed update data 1 year after implementation. For this study, I utilized this set of 37 facilities, dropping eight government-run facilities and one business facility for which there were missing data; the final set of cases consisted of 28 business facilities. Table 1 provides descriptive data about these 28 cases as reported in the baseline protocol. All but five facilities are part of a larger corporation, and in all but one facility, the adoption of the EMS was facility-wide. There is a roughly even split between public and private firms (15 and 13 facilities, respectively) and a range of sizes (10 facilities with <300 employees, 13 facilities with employees from 300 to 999 and 5 facilities with >1000 employees) and industries (over 20 four-digit Standard Industrial Classification (SIC) codes).

Coding and calibration of cases’ set memberships

QCA is a set-theoretic approach; each EMS program adoption rationale and each specific EMS program practice are considered to be a domain or “set” in which a case (i.e. adopter of an EMS) could have membership, and each case is assessed for its membership in each of these sets. In this study, I employed the fuzzy-set approach to assessing cases’ set memberships (e.g. Fiss, 2011; Misangyi and Acharya, 2014; Ragin, 2008), which affords the capture of both differences in kind (i.e. set membership) as well as differences in degree (i.e. within sets). Given the qualitative nature of the NDEMS survey data, a four-value fuzzy set was utilized; cases’ set memberships were assessed as being “fully in” (=1), “more in than out” (0.67), “more out than in” (0.33), or “fully out” (0) (e.g. Crilly, 2011; Misangyi and Acharya, 2014). The coding of fuzzy-set memberships requires the use of substantive and theoretical knowledge to translate the data according to these key qualitative anchors. In this study, this consisted of relying upon the academic literature on EMS programs (e.g. Andrews, 2003; Bansal and Bogner, 2000; Darnall and Edwards, 2006; Hillary, 2000; Melnyk et al., 2003; Steger, 2000), the practitioner literature (i.e. training manuals; Hazardous Waste Consultant, 2004; US EPA, 2001, 2006), and the data itself (Ragin, 2008).

Calibration of cases’ EMS program adoption rationales

The NDEMS survey included a questionnaire pertaining to the “Rationale for Adopting an EMS,” which presented respondents with a list of the “variety of reasons” a facility may adopt an EMS. Three primary EMS adoption rationales emerged from my analysis of these data: a *public relations/competitive advantage* rationale (*PR/advantage*, hereafter), an *environmental performance/environmental principles* rationale (*environmental*, hereafter), and a *proactive regulatory compliance* rationale (*compliance*, hereafter), and I assessed each case’s set membership in each of these three rationales by transforming the responses into a four-value fuzzy set. For an extended discussion of the analytical and calibration process of the rationales, including a presentation of the items as contained in the survey document, see Appendix 1 (and Table 4). These three rationales found here are consistent with previous findings as to the various institutional motivations guiding this

Table 1. Description of cases.^a

Facility ID	Is facility part of larger organization? If yes, please describe relationship.	Ownership	How many full-time employees at facility?	Is entire facility implementing EMS?	Primary SIC used by facility	Four-digit SIC description
1652	Yes Facility is a division of larger company ... supplies other divisions with steel	Privately owned	300–999	The EMS covers the entire facility	3312	Blast furnaces and steel mills
2230	Yes This facility is owned by a holding company	Privately owned	300–999	The EMS covers the entire facility	4911	Electric services
2843	Yes The facility is part of a larger corporation that is broken down into product lines	Publicly traded	100–299	The EMS covers the entire facility	3674	Semiconductors and related devices
2924	Yes The facility is the primary production and R&D facility for the corporation	Publicly traded	300–999	The EMS covers the entire facility.	4911	Electric services
3378	Yes This facility is a fossil fuel plant within a large power company	Publicly traded	50–99	The EMS covers the entire facility	4911	Electric services
3384	No This facility is not part of a larger organization	Privately owned	50–99	The EMS covers the entire facility	3599	Industrial machinery
3789	Yes This facility is a subsidiary of large corporation	Publicly traded	300–999	The EMS covers the entire facility	3861	Photographic equipment and supplies
4754	Yes This facility is a subsidiary of larger company in Denmark	Publicly traded	300–999	The EMS covers the entire facility	2869	Industrial organic chemicals
4857	No This facility is not part of a larger organization	Publicly traded	300–999	The EMS covers the entire facility	4931	Electric and other services combined
5120	No This facility is not part of a larger organization	Privately owned	<20	The EMS covers the entire facility	n/a	n/a
5557	Yes This facility is a subsidiary of larger, international organization	Publicly traded	300–999	The EMS covers the entire facility	3399	Primary metal products
5840	No This facility is not part of a larger organization	Privately owned	20–49	The EMS covers the entire facility	35	Industrial machinery and equipment
5863	Yes The facility is a subsidiary of a larger organization	Publicly traded	300–999	n/a	2611	Pulp mills

Table 1. (Continued)

Facility ID	Is facility part of larger organization? If yes, please describe relationship.	Ownership	How many full-time employees at facility?	Is entire facility implementing EMS?	Primary SIC used by facility	Four-digit SIC description
6275	Yes The parent company owns all stock of the facility; parent owned by holding company	Privately owned	300–999	n/a	3365	Aluminum foundries
6543	Yes This facility is one division of a two-parent organization	Privately owned	300–999	The EMS covers the entire facility	3069	Fabricated rubber products
6545	Yes This facility is a division of larger organization	Privately owned	100–299	The EMS covers the entire facility	3841	Surgical and medical instruments
6989	No This facility is not part of a larger organization.	Privately owned	50–99	The EMS covers the entire facility	3471	Plating and polishing
7102	Yes This facility is part of a larger corporation	Publicly traded	> 1000	The EMS covers one element of manufacturing, approximately 50 employees	36	Electronic and other electric equipment
7768	Yes This facility is one of eight manufacturing facilities in a division of a larger corporation	Privately owned	> 1000	The EMS covers the entire facility	3011	Tires and inner tubes
8048	Yes This facility is one of three similar facilities in business group of larger corporation	Publicly traded	100–299	The EMS covers the entire facility	2851	Paints & allied products
8256	Yes This facility is a wholly owned subsidiary of parent company in Japan	Privately owned	100 - 299	The EMS covers the entire facility	3861	Photographic equipment and supplies
8525	Yes The facility is a division of a larger organization; which is also a subsidiary of an international organization	Privately owned	100–299	n/a	3951	Pens and mechanical pencils

(Continued)

Table 1. (Continued)

Facility ID	Is facility part of larger organization? If yes, please describe relationship.	Ownership	How many full-time employees at facility?	Is entire facility implementing EMS?	Primary SIC used by facility	Four-digit SIC description
8610	Yes This facility is a medium and heavy truck manufacturing company. Also makes diesel engines for larger motor company	Publicly traded	>1000	The EMS covers the entire facility	3519	Internal combustion engines
9149	Yes This facility is one of three US manufacturing plants of a Japanese-owned corporation.	Privately owned	300–999	The EMS covers the entire facility	3585	Refrigeration and heating equipment
9402	Yes Subsidiary of a US holding company that is wholly owned by a corporation in Japan	Publicly traded	300–999	The EMS covers the entire facility	3562	Ball and roller bearings
9525	Yes This facility is one of 12 facilities that comprise the parent corporation and is a wholly owned subsidiary of the parent	Publicly traded	300–999	The EMS covers the entire facility	2082	Malt beverages
9773	Yes This facility is an operating division of a parent corporation that operates worldwide	Publicly traded	>1000	The EMS covers the entire facility	3572	Computer storage devices
9793	Yes This facility is a division of a larger corporation	Publicly traded	>1000	The EMS covers the entire facility	3721	Aircraft

^aSource: NDEMS Baseline Protocol.
EMS: environmental management system, SIC: Standard Industrial Classification, n/a: Response not provided.

field (e.g. “competitiveness,” “legitimation,” “ecological responsibility”; Bansal and Roth, 2000; see also Gladwin et al., 1995; Hoffman and Ventresca, 2002; Margolis and Walsh, 2003) as well as EMS programs in particular (e.g. Bansal and Bogner, 2000; Melnyk et al., 2003; Schaefer, 2007).

Thus, I used these three alternative declared rationales for the EMS adoptions captured in the NDEMS data “*as a basis of inference for a typical vocabulary of motives of a situated action*” (emphasis is original; Mills, 1940: 909). As already discussed above, that these espoused rationales were retrospective does not diminish their value as an inferential tool toward understanding the institutional meaning of the practices. Here again Mills (1940) is instructive:

Motives are imputed or avowed as answers to questions interrupting acts or programs. Motives are words. Generically, to what do they refer? They do not denote any elements “in” individuals. They stand for anticipated situational consequences of questioned conduct. (p. 905)

The first two of these declared reasons for the programs situate action within the societal-level community (i.e. environmental rationale) and market (i.e. PR/advantage rationale) institutional logics (cf. Thornton et al., 2012). As will be explained below, the overall pattern of findings suggest that the compliance rationale, on the other hand, is more of an “implicit category” that has its own vocabulary (Loewenstein et al., 2012: 33) but is embedded within the other two logics that ultimately are in tension in this particular institutional field (Hoffman, 1999, 2001).

Table 2 presents the cases’ set memberships in the three alternative rationales declared by the facilities for their EMS adoptions (see left panel). For descriptive purposes, I considered set memberships of 0.67 (“more in than out”) and 1 (“fully in”) as the avowal of the rationale. The studied cases clearly pursued EMS adoptions to fulfill multiple institutional intentions (see column 4, Table 2): all three rationales guided 11 of the cases, 14 cases declared two rationales, and 3 cases gave only one rationale as their reason for adoption (and among these, 2 declared the *environmental* rationale and 1 the *compliance* rationale as their sole reason for adoption). The *environmental* and *compliance* rationales were declared by most of the facilities (26 and 23 cases, respectively), while just over half (15 cases) of the facilities declared the *PR/advantage* rationale (among these, 11 declared all three rationales and 4 declared two rationales—3 of these with the *environmental* rationale and 1 with the *compliance* rationale).

Calibration of EMS practices

The expectant practices common to all EMS adoptions, ISO 14001 formally certified or not, are defined by a framework for managing a facility’s efforts to minimize its environmental impact through a cycle of planning (“Plan”), implementing (“Do”), monitoring (“Check”), and reviewing (“Act”) (“Plan-Do-Check-Act Cycle”; Darnall and Edwards, 2006; Hillary, 2000; US EPA, 2001, 2006). This framework provides the basis through which governmental environmental agencies (including the US EPA) and consultants educate practitioners on EMS programs as it presents the practices expected to be implemented by any and all businesses that adopt an EMS—regardless of facility size, industry, or past regulatory compliance record. Therefore, I identified the NDEMS survey items that corresponded to these practices comprising the Plan-Do-Check-Act framework and these were what I examined. An important aspect of my study design is that the choice of practices along these dimensions also helps to rule out the possibility that an adopting firm may consider these practices as being interchangeable. That is, *all* of the practices I examined here were expected to be implemented by an adopting facility. Specifically, the NDEMS survey included data on the *involvement of external stakeholders* in objective setting and planning (“Plan”), the degree to which *rewards* and *training* for the EMS program were put in place (“Do”), the frequency to

Table 2. Facilities' set memberships.^a

ID	EMS adoption rationales		EMS practices										Total EMS practice couplings ^c
	Environmental principles/environmental performance (environmental)	Proactive compliance (compliance)	Public relations/competitive advantage (PR/advantage)	Total rationales declared ^b	"Plan"	"Do"	Non-manager rewards (eereward)	Awareness training (awtrain)	Job training (jobtrain)	"Check"	"Act"		
				Involve external stakeholders (extstkinv)	Manager rewards (mgreward)				Audit frequency (auditfreq)	Review integrated (reviewing)			
1652	1	0.67	0.67	3	0.33	0	0	1	0.67	1	0.67	4	
2230	0.67	0.33	0.67	2	0	0	0	0.67	0	0.67	0	2	
2843	1	0.67	0.67	3	0	0.67	0.67	0	1	0	0	3	
2924	1	0.67	0.67	3	0	0.67	0.67	0.67	0.67	1	0.67	6	
3378	0.67	0.67	0.67	3	0.33	0.33	0.33	0.33	0.33	0	0.33	2	
3384	1	0.67	0.33	2	0	0	0	1	0.33	0.67	0.67	3	
3789	0.67	1	0.67	3	1	0.67	0.67	1	0.67	0.67	0.67	7	
4754	1	0.67	0.33	2	1	0	0	0.33	0.33	0	0.33	1	
4857	0.67	0.67	0.67	3	1	0	0	0	0.67	0	0.67	2	
5120	0.67	0.67	0.33	2	0	0	0	0	0	0	0	0	
5557	0.67	0.33	0.67	2	1	0	0	0.67	0.67	0	0.67	4	
5840	0.67	0.67	0.33	2	0	0	0	0.33	0	0	0	0	
5863	0.67	1	0.33	2	0	1	0.33	0.67	0.67	0.33	0.67	3	
6275	0.33	0.67	0.33	1	0.33	0.33	0	0	0	0	0	0	
6543	0.67	0.67	0.67	3	0	0.67	0.33	0.67	0.67	0.67	0.67	5	
6545	0.33	0.67	0.67	2	1	0	0	0.33	0.67	0.67	0.67	3	
6989	0.67	0.33	0.33	1	0	0.33	0.33	1	0.67	0	0.67	3	
7102	1	0.33	0.67	2	0	0.67	0	0.67	0.67	0	0.67	3	
7768	1	0.67	0.67	3	0.33	0.67	0.33	1	0.67	1	0.67	4	
8048	1	1	0.33	2	0	0.33	0.33	1	0.33	0.67	0.67	3	
8256	1	0.67	0.33	2	0	0.67	0	0.67	0.67	1	0.67	5	
8525	0.67	0.33	0.33	1	0.33	0	0	0.67	1	0.67	0.67	3	
8610	1	0.67	0.33	2	0	0.67	0	0.67	0.67	1	0.67	4	
9149	1	0.67	0.67	3	0	0	0	1	1	0	0	3	
9402	0.67	0.67	0.67	3	0	0	0	0	1	0	0	1	
9525	1	0.67	0.33	2	0	1	0	1	0.33	0.67	0.67	3	
9773	0.67	0.67	0.67	3	0	0.67	0.67	1	0.67	0	0.67	5	
9793	1	0.67	0.33	2	1	0.67	0.67	1	0.67	0	0.67	6	

EMS: environmental management system.

^aBased upon a four-value fuzzy set: 1.00 = "fully in"; 0.67 = "more in than out"; 0.33 = "more out than in"; 0.00 = "fully out."

^bTotal count of the facilities' EMS adoption rationale set memberships that are 1 or 0.67.

^cTotal count of the facilities' EMS practice set memberships that are 1 or 0.67.

which the program was *audited* (“Check”), and the integration of the EMS into regular managerial *review* (“Act”). Given space limitations, I here only briefly describe each particular practice and its corresponding fuzzy set. For more in-depth explanations of the data, coding process, and calibration thresholds, see Appendix 2

Involved external stakeholders (“Plan”). The “Plan” element of an EMS program prescribes the process through which facilities are to set their environmental performance objectives and operational targets for accomplishing these objectives (e.g. US EPA, 2006). EMS standards are process-oriented: thus, rather than prescribing what these objectives and targets should be, they instead guide facilities to involve external stakeholders that are affected by or are “concerned” with the facilities’ environmental impact (i.e. Hillary, 2000; US EPA, 2006). The NDEMS survey included two open-ended questions which were used to assess cases’ membership in the set of facilities that *involved concerned external stakeholders* (*extstkinv*) in developing their EMS objectives/targets.

Rewards and training (“Do”). The NDEMS data covered two types of practices from the “Do” EMS element—EMS rewards and EMS training. With respect to EMS rewards, firms are supposed to identify “personnel with responsibility for environmental performance” and develop “a program to recognize and reward personnel who perform environmental responsibilities” (US EPA, 2001). I assessed cases’ memberships based on two NDEMS open-ended items: (1) the set of facilities offering *manager rewards* (*mgrewards*) and (2) the set of facilities offering *non-manager rewards* (*eerewards*) for the EMS.

Two forms of EMS training practices are also expected—awareness training (i.e. “employees must be aware of the company’s environmental policy”; Hazardous Waste Consultant, 2004) and job training (i.e. “In addition, job-specific training should be provided”; Hazardous Waste Consultant, 2004) (see also US EPA, 2001, 2006). The NDEMS survey included two open-ended questions about the implementation of training practices, and I used these to assess each case’s membership: (1) in the set of facilities that implemented *awareness training* (*awrtrain*) and (2) in the set of organizations that implemented *job training* (*jobtrain*).

Audit frequency (“Check”). Key to the EMS program “Check” element is that facilities continually audit to “determine whether the EMS system has been implemented as planned” (Hazardous Waste Consultant, 2004). The NDEMS survey contained an open-ended item which addressed how often audits are performed on the facility’s EMS program, and this was used to assess each case’s membership in the set of facilities that *audit frequently* (*auditfreq*).

EMS review integration (“Act”). The NDEMS survey contained one open-ended item covering the key practice from the “Act” EMS element: the integration of management’s review of the EMS (“A management review procedure should be developed to ensure that top management periodically meets to evaluate the EMS”; Hazardous Waste Consultant, 2004; US EPA, 2006). This item was used to assess each case’s membership in the set of facilities that conducted and *integrated EMS reviews* (*reviewintg*).

A descriptive portrait of the cases’ set memberships in these expected EMS practices is presented in Table 2 (see right panel). Again, for descriptive purposes, set memberships of 0.67 (“more in than out”) and 1 (“fully in”) were considered as the presence or coupling of expected practices—that is, because these practices are expected to be implemented when an EMS program is adopted, the presence of practices constitutes instances of coupling—and set memberships of 0.33 (“more out than in”) and 0 (“fully out”) were considered as the absence or decoupling of expected practices—that is, because they were not implemented but expected to be, they constitute instances of

decoupling. As the rightmost column of Table 2 shows, simultaneity of coupling and decoupling within the facilities is the rule rather than the exception: while one case is fully coupled (all seven practices implemented) and three cases are fully decoupled (zero practices implemented), the remainder of the cases range between two and six practices coupled.

The central thesis of this study is that by examining what, if any, systematic connections these couplings and decouplings of EMS program practices have with the alternative rationales declared by the program adopters, this should help toward understanding the meaning of the (de)couplings. It can be expected that the presence (coupling, hereafter) of the EMS practices under study will be systematically connected to the *environmental* rationale, given that they were designed to fulfill this institutional intention. The aim here is to explore whether there are different systematic connections across the three rationales. If the absence (decoupling, hereafter) of practices is found to be systematically connected to the *PR/advantage* and/or the *compliance* rationales, then this should be telling as to the meaning of the (de)couplings.

Fuzzy-set analyses

I treat each of the three rationales avowed by the facilities for their EMS adoption as a separate condition of interest and examine whether and how the coupling (presence) and decoupling (absence) of the expectant practices are sufficient for observing each declared explanation. When the (de)coupling of an EMS program practice or combination of practices is sufficient for observing a particular espoused EMS program adoption rationale, the occurrence of the (de)couplings is always accompanied by the particular rationale. As discussed extensively elsewhere (e.g. see Misangyi and Acharya, 2014; Ragin, 2008), technically this implies a subset relationship between the theoretical attributes (practices) and the condition of interest (rationale), which is assessed by examining whether the cases' membership scores in the theoretical attributes are consistently less than or equal to the membership scores in the condition of interest. Consistency "indicates how closely a perfect subset relation is approximated" (Ragin, 2008: 44) where a consistency score of 1.0 means that there is a perfect subset relation.

Consistency is thus a key metric by which sufficiency analysis is evaluated and the researcher must establish certain *a priori* minimum acceptable levels of consistency for their analysis. I used in conjunction (1) a minimum acceptable overall solution consistency of 0.90 and (2) a cutoff in the truth table analysis based upon the gap in consistency scores, with a minimum raw consistency and proportional reduction in inconsistency (PRI) cutoff of 0.90 (e.g. Misangyi and Acharya, 2014). Given the relatively small number of cases and the exploratory nature of the study, I used a minimum frequency of one case per configuration (Crilly et al., 2012; Ragin, 2008; Rihoux and Ragin, 2009). Another important metric in QCA is coverage, which measures empirical relevance (Ragin, 2006). Coverage is calculated by taking the sum of the consistent membership scores for each configuration, and for the overall solution, as a proportion of the membership scores of the particular rationale. Both consistencies and coverages are reported for all of the results.

While my aim in this exploratory analysis was to be comprehensive, a model specification including all seven EMS practices involves an unacceptable level of risk that the findings may be due to chance; given the number of cases under study, according to the benchmarks set by Marx and Dusa (2011), only six attributes can be confidently examined (based upon a benchmark of 90% confidence; 6 attributes/28 cases yield 94% confidence; see their Table 4, pp. 114–115). Thus, while I did not feel comfortable basing my final interpretation on a model specification with all seven practices, but given no conceptual basis for which practice to omit, I examined an initial model specification with all seven attributes and used it as a preliminary guide as to which practice(s) to omit from the subsequent analyses. This preliminary analysis suggested that two

practices—audit frequency (*auditfreq*) and review integration (*reviewintg*)—are only peripherally or equivocally connected to the *environmental* rationale. Thus, the exploratory analyses proceeded by examining a model specification for each rationale omitting first *auditfreq*, then *reviewintg*, and then both of these practices. The findings of these analyses led me to further examine a model specification in which external stakeholder involvement (*extstkinv*) was omitted. In conducting these exploratory analyses, I followed previous research and assessed model fit based upon the balancing of three criteria: content (a final solution that best represents the emergent findings across the solutions), coverage (higher is better), and parsimony (fewer configurations are better) (Misangyi and Acharya, 2014). I report the findings of each of these exploratory analyses in Appendix 4, and the best-fitting solutions for each of the three rationales are shown in Table 3.

One final explanatory point before further discussing the results: following previous research, I interpret and report the intermediate solution and thereby denote the core and contributing aspects of the findings (e.g. Fiss, 2011; Misangyi and Acharya, 2014; Ragin, 2008). Simply put, this distinction shows the conclusiveness of the findings; core attributes are more decisively sufficient than are contributing attributes as the inclusion of the latter in the solution rely upon “hard” counterfactuals (for a more detailed explanation, see Appendix 3).

Starting with the *environmental* rationale, the clear result that emerged from the analyses is that the coupling of *rewards* and *training* are unequivocally connected to this rationale—that is, they instantiate a community institutional logic. The coupling of both manager (*mgrrewards*) and non-manager (*eerewards*) rewards appeared as core attributes sufficient for this rationale across all of the various solutions, as did awareness training (*awrtrain*) and job training (*jobtrain*). The exploratory analyses cemented the initial finding that neither *auditfreq* nor *reviewintg* played a core role in fulfilling the *environmental* rationale. Indeed, the best-fitting solution for this rationale (see top panel of Table 3) involved the model specification excluding these two attributes.⁴ Furthermore, while the coupling of the involvement of external stakeholders (*extstkinv*) was found as part of the configurations when *auditfreq* or *reviewintg* was included, this particular practice does not seem integral to fulfilling the *environmental* rationale as coverage did not change when *extstkinv* was omitted from the model (see Appendix 4), and this practice is irrelevant in the best-fitting solution (top panel of Table 3).

In contrast to the pattern of couplings that characterize the configurations connected to the *environmental* rationale, all of the configurations connected to the *PR/advantage* rationale involve both the coupling and decoupling of practices (Table 3, middle panel). Configurations 1 and 2 of this solution show that the combination of the decoupling of both types of rewards (*mgrrewards* and *eerewards*) and the coupling of *extstkinv*, along with *auditfreq* or *jobtrain*, respectively, is consistently connected to this adoption rationale. Configuration 3 shows that the decoupling of most practices—of *extstkinv*, *mgrewards*, *jobtrain*, and *auditfreq*—combined with the coupling of *awrtrain* (*eerewards* here are irrelevant) is sufficient for observing this reason for the adoption. Configuration 4 shows that *eerewards* combines with the decoupling of *extstkinv*. Two final noteworthy findings with respect to the configurations connected to the *PR/advantage* rationale are that (1) the best-fitting solution involved the inclusion of *auditfreq*, a practice that does not appear integral to the environmental rationale (see Appendix 4), and (2) *extstkinv* was part of all of the combinations sufficient for the *PR/advantage* rationale, and its presence combines with the decoupling of both types of rewards. Overall, the clear finding that emerges from this pattern of loose coupling connected to the *PR/Advantage* rationale is that the *decoupling* of *mgrewards* is an unequivocally key attribute here; the decoupling of *mgrewards* evidently instantiates the *PR/Advantage* rationale—and thus a market logic.

As the bottom panel of Table 3 depicts, the configurations sufficient for observing the *compliance* rationale comprise a rather clear pattern of couplings or decouplings. Configurations 1, 2, and

Table 3. Best-fitting solutions: practice configurations sufficient for the alternative EMS adoption rationales.^a

Configurations	Environmental rationale			
	1	2	3	
External stakeholders (<i>extstkinv</i>)			●	
Manager rewards (<i>mgrewards</i>)			●	
Non-manager rewards (<i>eerewards</i>)			●	
Awareness training (<i>awrtrain</i>)	●			
Job training (<i>jobtrain</i>)		●		
Consistency	0.94	0.94	1.00	
Raw coverage	0.72	0.47	0.22	
Unique coverage	0.28	0.05	0.02	
Overall solution consistency	0.95	Overall solution coverage		0.79

Configurations	PR/advantage rationale			
	1	2	3	4
External stakeholders (<i>extstkinv</i>)	●	●	⊗	⊗
Manager rewards (<i>mgrewards</i>)	⊗	⊗	⊗	
Non-manager rewards (<i>eerewards</i>)	⊗	⊗		●
Awareness training (<i>awrtrain</i>)			●	
Job training (<i>jobtrain</i>)		●	⊗	
Audit frequency (<i>auditfreq</i>)	●		⊗	
Consistency	1.00	1.00	1.00	1.00
Raw coverage unique	0.30	0.19	0.21	0.26
Coverage	0.12	0.02	0.14	0.16
Overall solution consistency	1.00	Overall solution coverage		0.70

Configurations	Compliance rationale				
	1	2	3	4	5
External stakeholders (<i>extstkinv</i>)		⊗	⊗		
Manager rewards (<i>mgrewards</i>)		●		⊗	⊗
Non-manager rewards (<i>eerewards</i>)	●				
Awareness training (<i>awrtrain</i>)				⊗	⊗
Job training (<i>jobtrain</i>)			●	●	⊗
Review integration (<i>reviewintg</i>)		●	●	⊗	●
Consistency	1.00	1.00	1.00	1.00	1.00
Raw coverage	0.30	0.22	0.20	0.15	0.13
Unique coverage	0.17	0.09	0.07	0.06	0.07
Overall solution consistency	1.00	Overall solution coverage			0.65

EMS: environmental management system.

^aCentral conditions denoted by ● (coupled) and ⊗ (decoupled); contributing conditions are denoted by ● (coupled) and ⊗ (decoupled).

3 appear to acquiesce to institutional expectations for environmental protection, and thus essentially instantiate the community logic: these first three configurations here couple all but one of the

core expected EMS practices (*mgreward*, *eereward*, *jobtrain* but not *awrtrain*)—couplings all linked to the *environmental* rationale—but *extstkinv* is decoupled (as a contributing condition; see configurations 2 and 3; Table 3, bottom panel). Thus, they also further suggest that *extstkinv* is not an integral part of fulfilling the community logic. On the other hand, configurations 4 and 5 show that there is also an unmistakable pattern of decoupling under this rationale: both of these latter combinations involve the decoupling of *mgreward*—a decoupling that was connected to the *PR/advantage* rationale and thus instantiates the market logic (and both configurations also involve the decoupling of *awrtrain* as a core attribute, while the coupling or decoupling of *jobtrain* appears, respectively, across the two configurations). Here, the best-fitting solution involved the inclusion of *reviewintg* rather than *auditfreq* (which was best for the *PR/advantage* rationale) or the omission of both (which was best for the *environmental* rationale). The pattern of configurations was qualitatively similar when *auditfreq* was included and not *reviewintg* (see Appendix 4) with one noteworthy difference: when *reviewintg* was specified, the presence of *extstkinv* appeared in configurations 4 and 5.

These findings that involving external stakeholders (*extstkinv*) seems to instantiate a market logic rather than a community logic were intriguing given that this result stands in direct contrast to the expectations of the designers of the EMS programs, and more generally within the stakeholder literature. I thus went back to the seven cases that were coded as having membership in *extstkinv* to investigate this further and found that only two of these cases formally incorporated external stakeholders in their decision making as part of a “formal stakeholder group,” and these two facilities were not part of the decoupling pattern (but did comprise the configurations in the exploratory analyses wherein the presence of *extstkinv* was connected to the *environmental* rationale). In contrast, the involvement of external stakeholders by the other five facilities consisted of the facilities’ consultations with governmental officials (state, county, or city environmental or health department employees) in developing their EMS goals. I interpret this pattern of results as suggesting that adopters of an EMS program seeking to fulfill a *PR/advantage* rationale may have incorporated external institutional stakeholders as a way of neutralizing their influence rather than seeking their guidance to enhance effectiveness (e.g. “cooptation”; Pfeffer and Salancik, 1978). The results also suggest, nevertheless, that such cooptation is not necessarily part of decoupling (configuration 4, Table 3, middle panel).

Institutional complexity and the meaning of decoupling

Understanding the meaning of decoupling in complex institutional fields has remained difficult because organizations in such contexts are confronted with multiple viable intentions for their (in) actions and because their responses to institutional complexity may be unwitting in nature (Greenwood et al., 2011). In this study, I embraced a dialectical view of loose coupling—wherein “patterns of couplings and decouplings, instead of just decouplings” are considered along with the potential alternative intentions that stand to guide (de)couplings (Weick, 1976: 10)—and integrated it with the insights that practices are inherently “ontological performances” within institutional logics (Friedland, 2002), that each logic has its own intentions which are reflected in a vocabulary of motives (Loewenstein et al., 2012; Thornton et al., 2012), and that the meaning of actions can be inferred from their connection to these vocabularies (Mills, 1940; Mohr and Duquenne, 1997; Mohr and Guerra-Pearson, 2010). Based on these insights, I conducted a comparative case study of businesses that adopted an EMS to explore whether and how the (de)couplings of the expected practices of this institutional program are systematically connected to the various declared rationales given by the program adopters’ for their EMS program adoptions.

The findings clearly show that when an institutional program was adopted in this complex field, the intentions of doing so reflected more than one of the prevailing logics competing in the field to guide the program. The studied EMS adopters declared multiple reasons for their program adoptions—an environmental rationale, a public relations/competitive advantage rationale, and a compliance rationale—and with few exceptions, the cases declared more than one of these institutional intentions for their EMS adoption. Furthermore, the data show that the simultaneity of coupling and decoupling of program practices was the rule rather than the exception—and this finding is particularly important given that the studied practices are not interchangeable; they constitute the key elements of an EMS program which are all expected to be implemented regardless of the facility size, industry or previous environmental record.

Analyses of the sufficiency of the presence (i.e. coupling) and absence (i.e. decoupling) of particular expected EMS program practices for observing the various declared EMS program adoption rationales revealed different systematic connections that shed light on the meaning of the (de) couplings. The configurations found to be sufficient for observing the environmental rationale showed that the presence of rewards (manager and non-manager) and training (awareness and job specific) are systematically connected to this rationale—and thereby instantiate the community institutional logic. In contrast, the configurations sufficient for observing the PR/advantage rationale showed that while some practices (i.e. training) that fulfilled the environmental rationale are also congruent with the PR/advantage rationale, the coupling of these practices occurred alongside of an unmistakable pattern of the *absence* of managerial rewards. In other words, the *decoupling* of managerial rewards evidently instantiates the market logic. Interestingly, the configurations sufficient for observing the compliance rationale showed a clear pattern of configurations that either fulfilled the environmental rationale or fulfilled the PR/advantage rationale. While the facilities that declared the compliance rationale for the EMS adoption did so presumably aimed at regulatory compliance, their adoptions nevertheless instantiated either the community *or* the market institutional logic. Thus, the compliance rationale seems to be an “implicit category” within this institutional field that has its own vocabulary but is embedded within the two societal-level logics vying to guide this institutional field (Loewenstein et al., 2012: 33). The findings therefore well exemplify that “the degree to which logics are incompatible” matters to how organizations respond to institutional complexity (Greenwood et al., 2011: 332): the two societal-level logics have incompatible goals (environmental sustainability vs profit maximization), and evidently EMS programs ultimately end up serving one or the other of these two logics.

These findings have several implications for future research on organizational responses to institutional complexity. While past research has provided insight into a view of institutional complexity wherein conflicting institutional logics are imposed on the organization by powerful (or less powerful) external institutional constituents (e.g. Durand and Jourdan, 2012: 1296; Pache and Santos, 2010; Raaijmakers et al., 2015), this study points to the need for more future investigations into how organizations and their managers respond to conflicting institutional *cognitive* pressures. That is, because institutional logics are a cognitive-cultural institutional force (Scott, 2001), the social actors within the field also experience this plurality cognitively *within* themselves and may even try to mix or balance these multiple intentions in the actions that they take (Wry and York, 2015). The findings in this study suggest that when faced with incompatible cognitive institutional pressures, the adopters of the EMS programs attempted to fulfill more than one, if not all, of the multiple institutional intentions with their program adoptions. Although these “mixed motives” were aided by the loose coupling of the expected program practices, that managerial rewards are compatible with one, but not the other, of the logics means that the coupling or decoupling on this pivotal practice served to substantiate the program within one logic or the other.

Although the focus of this study is on decoupling as a response to external legitimacy pressures, its findings and approach would also seem to prove useful for future research on hybrid organizations—organizations that attempt to “incorporate competing institutional logics” into their organizational structures and designs (Pache and Santos, 2013: 972; for example, see also Battilana and Lee, 2014; Besharov and Smith, 2014). As Wry and York (2015) have highlighted, this literature has also taken a strategic view of institutional complexity that plays out within organizations as a contest between factions who uniformly adhere to opposing logics. Thus, taking a more problematized view of institutional intentions and actions would seem fruitful for developing a further understanding of these internal structures. For instance, hybrid organizational structures are often a result of negotiations (e.g. Ashforth and Reingen, 2014; Battilana et al., 2015; Jay, 2013) or the “selective coupling” from each logic (Pache and Santos, 2013: 972), and while the evidence suggests that these structures work to gain legitimacy, the more problematized approach offered here suggests that centering attention toward those practices that are compatible across logics and those that are not—the latter being pivotal to whether one or the other logic is instantiated—facilitates an examination of which, if any, of the incompatible logics are being instantiated by the structure. In short, future research on institutional complexity that moves beyond the assumption that social actors adhere to one particular logic or another and instead delve deeper into how social actors engage with and are influenced by the multiple institutional intentions in the field should prove fruitful.

This is not to say that social actors are not strategic in the face of institutional complexity. Indeed, although the data used in this study were not conducive to sociopolitical dynamics, the fact that the configurations systematically connected to the compliance rationale showed a clear pattern of “acquiescence” or “avoidance” (of the core expected EMS practices) means that the instances of decoupling essentially amount to regulatory non-compliance. In other words, at least with respect to regulatory compliance, it is possible that some of the facilities engaged in a form of organizational “hypocrisy”: they said “what can and should be said” while at the same time did “what can be done” (Brunsson, 1993: 502). To the extent that this finding represents a deliberate avoidant façade by the facilities toward regulations, then this supports Scott’s (2001: 172) contention that “organizations are more likely to practice avoidance when confronted with external regulatory requirements than with normative or cognitive-cultural demands.” Regardless, this finding points to the possibility that lower level logics embedded within greater societal-level logics—that is, “implicit categories” (Loewenstein et al., 2012) or “ontologies” (Ruef, 1999)—may be more apt as strategic “tools.” For instance, McPherson and Sauder (2013) found that the logics of the various professions within a drug court were used strategically by the actors in their arguments to the others. Future research that further delves into how logics at different levels may be used strategically is certainly warranted. In any case, as Mills (1940) has noted, we can never truly know about the “deliberateness” of a social actor’s declarations or of their (in)actions. The approach taken in this study focuses attention instead toward examining the institutional explanations actors give for their actions and whether or not their (in)actions are connected to such declarations. For, regardless of whether or not declared institutional intentions are purely “rhetorical strategies,” they situate actions (Loewenstein et al., 2012; Mills, 1940), and the current findings suggest that their systematic connections to actions, and even inactions, imbue meaning.

This study, therefore, not only directly answers Greenwood et al.’s (2011) call for studies to examine “the motivations behind decoupling” as a response to institutional complexity but also provides a means by which future research may do so (p. 350). This problematized approach also has major implications for future research on decoupling more generally: it shifts what future decoupling researchers remain agnostic about. Decoupling researchers have typically presumed that decoupling is done deliberately and have remained agnostic about its underlying motives (e.g.

see Fiss and Zajac, 2004). The view taken here, in contrast, suggests that future decoupling researchers stay agnostic about whether or not decoupling is deliberate and not be agnostic about the *institutional* motives that decoupling may ultimately instantiate.

Greenwood et al. (2011) have further noted that “we seem to lack the theoretical language to talk about the unwitting consequences” of decoupling as an organizational response to institutional complexity (p. 350). This study suggests that such theoretical language as “institutional motives,” “simultaneity,” and “instantiates,” and thereby a lessened emphasis on such theoretical language as “institutional constituents,” “avoidance,” and “lack of substance,” well equips future research to take on these broader issues and thereby develop a fuller understanding of organizational responses in the face of institutional complexity. In providing a means by which an evaluation of the connections between intentions and actions can be facilitated, the problematized approach advanced here should help both to disable the use of decoupling as a deceptive device and to lift the veil of cynicism that has come to enshroud it, both in the institutional field surrounding businesses’ care for the natural environment and in complex institutional fields more generally.

Acknowledgements

I thank Forrest Briscoe, Peer Fiss, Barbara Gray, Denny Gioia, and William Ocasio for their suggestions and feedback on earlier versions of this article. I owe gratitude to Yasemin Kor and Jennifer Paxton, both of whom were especially helpful in the early stages of this study. I am also grateful to Patrick Vermeulen, Charlene Zietsma, and my three anonymous reviewers for their constructive guidance during the review process.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. As Orton and Weick (1990) have highlighted, this dialectical interpretation of loose coupling is in contrast to the more conventional “unidimensional interpretation” wherein loose coupling “is typically portrayed as the endpoint of a scale that extends from tightly coupled to loosely coupled” (p. 205). Moreover, although early seminal work (e.g. Meyer et al., 1981; Meyer and Rowan, 1977; Thompson, 1967) portrayed a more dialectical interpretation of loose coupling (i.e. that loosely coupled systems involve both coupling and decoupling), subsequent research drifted toward a unidimensional interpretation as researchers have come to “portray loose coupling as *decoupling*” (Orton and Weick, 1990: 207; emphasis in original). In essence, decoupling has come to be treated as synonymous with loose coupling.
2. Legitimacy thus in this sense “adopts a managerial perspective and emphasizes the ways in which organizations instrumentally manipulate and deploy evocative symbols in order to garner societal support” (Suchman, 1995: 572). As Suchman has noted, this is in contrast to the notion of legitimacy underlying Meyer and Rowan’ (1977) view of it which “emphasizes the ways in which sector-wide *structuring dynamics* generate cultural pressures that transcend any single organization’s purposive control” (Suchman, 1995: 572; emphasis in original)
3. The coding took into account both the “EMS Design Protocol” (i.e. administered during the initial implementation of the environmental management system (EMS)) as well as the “First Update Protocol” (i.e. reported any changes in the first year after initiating the EMS); thus, for example, a facility that did not implement a practice initially but then did so within the first year would be considered as implementing the practice.
4. And given that this model specification includes only five attributes, this means that we can have great confidence that this particular solution is not based upon chance (Marx and Dusa, 2011)

5. And it is called the intermediate solution because it lies between the parsimonious solution (both easy and hard counterfactuals) and a complex solution which uses no counterfactuals (see Ragin, 2008).

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Appendix I

Coding of cases' environmental management system adoption rationales

The National Database on Environmental Management Systems (NDEMS) survey included a list of the “variety of reasons” a facility may adopt an environmental management system (EMS), and respondents were asked to assess each of the reasons “in terms of how important they were to your facility's decision to design and adopt an EMS” where the possible responses were H=high importance, M=medium importance, L=low importance and N/A=not applicable. Table 2 presents the complete items as contained in the NDEMS baseline survey document.

Given the ordinal nature of this particular survey measure, I performed a principal component analysis (PCA) on the responses to these items to extract the different rationales for the EMS adoption these items represent. As Table 4 shows, the various items represent six rationales for EMS adoption (with eigenvalues ranging from 1.8 to 2.8; percent of variance explained ranging from 9.4% to 14.9%): factor 1 represents a *public relations/competitive advantage* rationale (*PR/advantage*, hereafter); factor 2 represents an *environmental performance/environmental principles* rationale (*environmental*, hereafter); factor 3 represents a *customer pressure/cost reduction*

Table 4. Principal component analysis of “rationale for adopting EMS.”^a

Survey item ^b	1	2	3	4	5	6
EMS adoption may be a valuable marketing tool	0.834	0.056	0.238	-0.074	0.055	0.065
EMS adoption may be a valuable public relations tool	0.667	0.290	-0.046	0.274	-0.172	0.311
Adoption of an EMS may increase our revenues	0.688	0.147	0.124	-0.191	0.290	-0.161
Adoption of an EMS may provide a competitive advantage	0.818	-0.070	0.031	0.069	-0.058	-0.016
Adoption of an EMS may improve employee participation in the facility’s environmental performance	0.006	0.744	0.217	-0.127	0.105	0.026
Adoption of an EMS may improve environmental performance	0.017	0.703	0.203	0.113	0.137	0.327
Adoption of an EMS is consistent with the facility’s overall environmental principles	0.250	0.734	-0.241	-0.144	0.285	-0.080
Domestic customers’ pressure for ISO 14001 certification	0.020	-0.011	0.885	-0.142	-0.006	-0.220
International customers’ pressure for ISO 14001 certification	0.174	0.324	0.732	-0.051	-0.053	-0.037
Adoption of an EMS may reduce our costs	0.203	-0.004	0.638	0.076	0.302	0.262
Parent company requires adoption of EMS	0.250	0.091	0.048	-0.766	0.113	0.175
Availability of government assistance programs to aid in EMS development makes EMS adoption attractive	0.145	-0.155	-0.095	0.846	-0.070	0.068
Regulators’ pressure to adopt an EMS	0.054	0.042	-0.060	-0.193	0.790	0.092
Outside interested parties’ pressure to adopt an EMS	0.021	0.267	0.327	0.183	0.723	-0.118
Adoption of an EMS may lead to regulatory benefits	0.285	0.285	0.073	0.237	-0.290	0.598
Adoption of an EMS may improve facility compliance with environmental regulations	-0.111	0.003	-0.132	-0.174	0.028	0.820
Shareholders’ or owners’ pressure for ISO 14001 certification	0.110	0.440	-0.035	-0.062	0.550	-0.313
Environmental management professionals are increasingly supporting EMS	0.408	0.505	0.337	-0.349	-0.112	0.218
Insurers may reward ISO 14001 certification	0.232	0.245	0.096	0.558	0.410	0.432

EMS: environmental management system.

^aRotation method: Varimax with Kaiser normalization. Items with factor loadings $\geq .60$ were used as representing factor (and are in bold).

^bOriginal items from the National Database on Environmental Management Systems (NDEMS) Baseline Protocol.

rationale; factor 4 reflects an *parent mandate/assistance availability* rationale; factor 5 reflects a *reactive compliance* rationale; and, factor 6 represents a *proactive compliance* rationale (*compliance*, hereafter).

I then assessed each case's set membership in each of these six different rationales into a four-value fuzzy set using the following thresholds for full membership and non-membership: to be "fully in" a set, a facility must have rated each reason making up the particular rationale as being of "high importance," whereas "fully out" was assigned when each reason was rated as "not applicable." For example, the responses to the four items that loaded on factor 1 were used to assess each case's set membership in the set of facilities that declared a *PR/advantage* rationale for adopting their EMS, and to be calibrated as fully in this set, all four reasons constituting the *PR/advantage* rationale would have to be rated as of high importance. Both the facility's ratings (i.e. "medium importance," and "low importance") and the factor loadings were used to code the set membership as being either "more in than out" or "more out than in." For example, two items constitute the *compliance* rationale ("adoption of an EMS may lead to regulatory benefits," factor loading = 0.598; "adoption of an EMS may improve facility compliance with environmental regulations," 0.82). If a facility rated these two reasons as being of "low" and "medium" importance, respectively, this would place its membership in the realm of "maximum ambiguity" (i.e. "neither in nor out"; Ragin, 2008: 32). Here, I would have coded it as "more in than out" given the higher rated degree of importance ("medium") placed upon the reason with the more relative empirical importance (factor loading of 0.82).

I initially performed the subsequent descriptive and sufficiency analyses (e.g. similar to what is discussed and reported in Tables 2 and 3 in this article) on all six of the rationales. First, none of the cases reported the *reactive regulatory compliance* rationale ("Regulators' pressure to adopt EMS"; "Outside interested parties pressure to adopt an EMS"; see Table 4) for the EMS adoption (i.e. all of the cases were either "more out than in" or "fully out" of this set). It follows that this rationale did not guide practices; no practice configurations were found to be connected to this rationale. While this finding may in part be a result of the NDEMS design—as discussed above, some states did not allow facilities with prior compliance problems to participate in the study—it means that the "legitimation motivation" or compliance logic that vies to guide EMS adoptions (e.g. Bansal and Bogner, 2000; Bansal and Roth, 2000; Hoffman, 2001) takes the form of a *proactive compliance rationale* (*compliance*, hereafter) among the studied EMS adopters.

Second, the *customer pressure/cost reduction* and *parent mandate/assistance availability* rationales represent the same logic as the *PR/advantage* rationale—the configurations found to be consistently connected to these former two rationales were simply "neutral permutations" of the

Appendix 2. EMS practices: NDEMS survey questions and fuzzy-set calibrations.

EMS practice ^a	NDEMS survey items ^b	Fuzzy-set calibration of set membership ^c
<p>EMS element: "Plan" Involve external stakeholders (extstskinv)</p>	<p>"Were any persons involved in determining the objectives and targets who were not employees of the facility?" Possible response: yes or no. If yes, "please complete a table providing the type of stakeholder and the level of their involvement and impact on EMS planning." "Were these interested parties part of a formal stakeholder group?" Possible response: yes or no. If yes, "please explain."</p>	<p>0: No external stakeholders were involved in setting objectives and targets 0.33: Only "consultants" were involved in setting objectives and targets 0.67: Suppliers, customers, or a local emergency planning committee were involved in setting objectives and targets 1: Environmental government agencies, local citizens groups, local/state/national environmental groups, or a formal stakeholder group were involved in setting objectives and targets</p>
<p>EMS element: "Check" Audit frequency (auditfreq)</p>	<p>"Are audits performed on the facility's EMS?" Possible response: yes or no. If yes, then "How often will these audits be performed?" Possible response: open-ended ("please provide details of audit frequency")</p>	<p>0: The facility did not have an audit program 0.33: The facility performed audits less frequently than once per year 0.67: The facility performed audits on an annual or biannual basis 1: The facility performed audits at least quarterly</p>
<p>EMS element: "Act" Review integrated (reviewintg)</p>	<p>"Does top management review the facility's EMS?" Possible response: yes or no. If yes, then "Is the EMS review process integrated with other periodic management reviews?" Possible response: open-ended ("please explain how")</p>	<p>0: The facility's top management team did not review the EMS 0.67: The facility integrated the EMS review with specific, related periodic reviews (e.g. ISO 9000, safety) 1: The facility integrated the EMS review with all other periodic management reviews (e.g. "the EMS review is integrated with quarterly site goal performance reviews")</p>
<p>EMS element: "Do" Manager rewards (mgreward)</p>	<p>"Is the facility's environmental performance ... incorporated into the incentive structure of managers (italics in original)?" Possible response: yes or no. If yes, "please explain how" Possible response: open-ended</p>	<p>0: EMS objectives/environmental performance not incorporated into the incentive structure of managers. 0.33: EMS objectives/environmental performance indirectly incorporated into managers' incentives (e.g. "waste minimization is important to meeting the goals of lean manufacturing") 0.67: EMS objectives/environmental performance incorporated into managers' incentives (e.g. "environmental performance is part of performance reviews of managers") 1: EMS objectives/environmental performance primary element of managers' incentives (e.g. "environmental performance is viewed equally with other business performance factors")</p>

Appendix 2. (Continued)

EMS practice ^a	NDEMS survey items ^b	Fuzzy-set calibration of set membership ^c
Non-manager rewards (<i>eereward</i>)	<p>“Is the facility’s environmental performance ... incorporated into the incentive structure of non-managers (italics in original)?”</p> <p>Possible response: yes or no. If yes, “please explain how”</p> <p>Possible response: open-ended</p>	<p>0: EMS objectives/environmental performance not incorporated into the incentive structure of non-managers</p> <p>0.33: EMS objectives/environmental performance indirectly incorporated into non-managers’ incentives (e.g. “job duties and responsibilities have been updated to include compliance and conformance with EMS applicable issues.”)</p> <p>0.67: EMS objectives/environmental performance incorporated into non-managers’ incentives (e.g. “environmental performance is part of performance reviews of employees”)</p> <p>1: EMS objectives/environmental performance primary element of managers’ incentives</p>
Awareness training (<i>awtrain</i>)	<p>“Are programs in place for training employees at all levels about the significant impacts, actual or potential, of their work activities and about their roles and responsibilities in the EMS?”</p> <p>Possible response: yes or no. If yes, “please explain this training.” The open-ended responses for those facilities who responded yes to the survey item listed for TRAIN above were assessed</p>	<p>0: No formal procedure was in place to make employees aware of EMS policy, importance of EMS, and consequences of facility nonconformance to the EMS</p> <p>0.33: EMS awareness training done indirectly, such as through other programs (e.g. “These issues are discussed in orientation ... Safety training reinforces these issues.”)</p> <p>0.67: EMS awareness training is formally conducted (e.g. “EMS training for new hires”)</p>
Job training (<i>jobtrain</i>)	<p>The open-ended responses (i.e. “please explain this training”) for those facilities who responded yes to the survey item listed for <i>awtrain</i> above along with the responses to an additional item regarding effectiveness of training:</p> <p>“Does the facility evaluate the effectiveness of this training?”</p> <p>Possible response: yes or no. If yes, “please explain how” (open-ended response)</p>	<p>1: EMS awareness training is mandatory for all employees (e.g. “mandatory ISO 14001 awareness training to all plant personnel”)</p> <p>0: The facility offered no formal procedure for job-specific training of employees for their roles and responsibilities in the EMS</p> <p>0.33 Some level of job-specific training conducted (e.g. “Standard operating procedures are in place for every job function.”)</p> <p>0.67: Job-specific training formally conducted and training effectiveness is assessed (e.g. “Primarily relates to waste handling and emissions control ... Testing and auditing are performed.”)</p> <p>1: Job-specific training formally conducted, including how specific roles and responsibilities fit into overall EMS, and training effectiveness is formally assessed</p>

EMS: environmental management system; NDEMS: National Database on Environmental Management Systems.

^aSubsequent abbreviations used to denote practice is in parentheses.

^bAll items are quoted from the EMS Design Protocol (Amaral et al., 1999).

^cBased on four-value fuzzy set where: 1.00 = “fully in”; 0.67 = “more in than out”; 0.33 = “more out than in”; and 0.00 = “fully out.”

same configurational types (Fiss, 2011: 16) as those found to be connected to the *PR/advantage* rationale.

Thus, given these findings and for reasons of parsimony, in the remainder of the article, I focus the discussion and reporting on the *compliance*, *PR/advantage*, and *environmental* rationales.

Appendix 3

Core versus contributing attributes in QCA

Sufficiency analyses are conducted through the use of a truth table analysis which maps the 2^k logically possible configurations (k is the number of attributes, so in this study, there are 2^6 or 64 logically possible configurations). The analysis requires the use of counterfactual analysis in determining the sufficiency of the attributes under study, and the fuzzy-set qualitative comparative analysis (fsQCA) program produces both parsimonious and intermediate solutions which are used by the researcher to interpret the findings (for in-depth explanations, see Fiss, 2011; Greckhamer et al., 2008; Ragin, 2000, 2008). In brief, these solutions reflect a counterfactual analysis based upon both the populated configurations as well as those configurations for which no cases exist (which are called “remainders” in QCA). The parsimonious solution shows combinations of attributes that are considered to be “core” or “central” conditions because they appear after both easy and hard counterfactual analysis have been applied—the configurations to assess the sufficiency of these combinations exist among the studied cases. The intermediate solution⁵ reports those configurations of attributes that are sufficient based after only an easy counterfactual analysis has been applied—that is, the solution reflects the empirical data at hand as well as what would theoretically be expected to occur if the remainders were populated with cases. In this study, it is assumed that the presence of practices is expected for the environmental rationale. By comparing the intermediate and parsimonious solutions, the researcher identifies conditions which can be considered as “contributing” (Ragin, 2008) or “peripheral” (Fiss, 2011) because they can only be removed from the solution through hard counterfactuals—that is, removing them from the solution would go against what would be assumed to occur. Conventionally, the intermediate solution is what gets reported in a manner that denotes those attributes that are core conditions and those that are contributing conditions as is done in Table 3.

Appendix 4. Exploratory sufficiency analysis solutions.^{a,b}

Drop: AUDITFREQ (six conditions)	Environmental rationale (0.96, 0.75) ^c	MGRREWARDS*AWRTRAIN + MGRREWARDS*eerewards + AWRTRAIN*reviewintg + AWRTRAIN*JOBTRAIN + JOBTRAIN* reviewintg + extstkinv* JOBTRAIN EXTSTKINV*~MGRREWARDS*~EEREWARDS*JOBTRAIN*~reviewintg + ~extstkinv*~MGRREWARDS*AWRTRAIN*JOBTRAIN*REVIEWINTG + EXTSTKINV*~mgrrewards*~eerewards*~awrtrain*~jobtrain*REVIEWINTG + ~AWRTRAIN*~JOBTRAIN + ~EXTSTKINV*EEREWARDS
PR/advantage rationale (1.00, 0.58)	Compliance rationale (1.00, 0.65)	EEREWARDS + ~extstkinv*MGRREWARDS*REVIEWINTG + ~extstkinv*JOBTRAIN*REVIEWINTG + ~mgrrewards*~AWRTRAIN*JOBTRAIN*~reviewintg + ~mgrrewards*~AWRTRAIN*~jobtrain*REVIEWINTG
Drop: REVIEWINTG (six conditions)	Environmental rationale (0.95, 0.84)	MGRREWARDS*EEREWARDS*auditfreq + AWRTRAIN + JOBTRAIN*auditfreq + EXTSTKINV*~AUDITFREQ EXTSTKINV*~MGRREWARDS*~EEREWARDS*AUDITFREQ + ~extstkinv*~MGRREWARDS*AWRTRAIN*~jobtrain*~AUDITFREQ + EXTSTKINV*~MGRREWARDS*~EEREWARDS*JOBTRAIN + ~EXTSTKINV*EEREWARDS
PR/advantage rationale (1.00, 0.70)	Compliance rationale (0.97, 0.63)	EEREWARDS + MGRREWARDS*JOBTRAIN + ~extstkinv*MGRREWARDS*~AUDITFREQ + ~extstkinv*MGRREWARDS*~AWRTRAIN + ~extstkinv*~AWRTRAIN*JOBTRAIN + ~AWRTRAIN*JOBTRAIN*~auditfreq + EXTSTKINV*~mgrrewards*~AWRTRAIN*~JOBTRAIN + EXTSTKINV*~mgrrewards*~AWRTRAIN*~auditfreq

(Continued)

Appendix 4. (Continued)

<p>Drop: AUDITFREQ, REVIEWINTG (five conditions)</p>	<p>Environmental rationale (0.95, 0.79)</p>	<p>MGRREWARDS*EEREWARDS + AWRTRAIN + JOBTRAIN EXTSTKINV*~MGRREWARDS*~EEREWARDS*JOBTRAIN + ~EXTSTKINV*EEREWARDS EEREWARDS + MGRREWARDS*JOBTRAIN + ~extstkinv*MGRREWARDS*~AWRTRAIN+ ~AWRTRAIN*JOBTRAIN</p>
<p>PR/advantage rationale (1.00, 0.44)</p> <p>Compliance rationale (1.00, 0.46)</p>		
<p>Drop: EXTSTKINV (six conditions)</p>	<p>Environmental rationale (0.96, 0.75)</p>	<p>MGRREWARDS*AWRTRAIN*auditfreq + MGRREWARDS*EEREWARDS*auditfreq + AWRTRAIN*reviewintg + JOBTRAIN ~MGRREWARDS*~eerewards*AWRTRAIN*~jobtrain*~AUDITFREQ + ~MGRREWARDS*AWRTRAIN*JOBTRAIN*REVIEWINTG + ~mgtrewards*~eerewards*~AWRTRAIN*JOBTRAIN*~AUDITFREQ *~REVIEWINTG + ~AWRTRAIN*~JOBTRAIN + EEREWARDS*~AWRTRAIN*~JOBTRAIN + EEREWARDS* REVIEWINTG EEREWARDS + MGRREWARDS*REVIEWINTG + JOBTRAIN*REVIEWINTG + ~mgtrewards*~AWRTRAIN*JOBTRAIN*~AUDITFREQ + ~AWRTRAIN* REVIEWINTG</p>
<p>PR/advantage rationale (0.96, 0.63)</p>	<p>Compliance rationale (0.97, 0.65)</p>	

^aBoolean notation is as follows: ~ denotes absence, * denotes "and," and + denotes "or."
^bCore conditions are denoted by upper case, contributing conditions by lower case.
^cSolution consistency and coverage, respectively. Here, solution consistency = 0.96 and solution coverage = 0.75.