Organizational Identity in Communication Risks: Studies of Japanese Corporate Misconduct¹

Toru Kiyomiya

INTRODUCTION

Business scandals and corporate misdeeds have never disappeared on the news media in Japan, but rather the reports about these problems have become more proliferated, particularly after the Japanese bubble economy burst in around 1992 (Kiyomiya, Matake, and Matsunaga, 2006).² Japanese business scandals tend to be viewed as collaborative practices in organization, not personal crimes (Arimori, 2003). The government as well as some management associations have intervened to alter such corporate governance systems and commercial laws, much as Western countries have attempted (Demise, 2004). Unfortunately, these Western styles of reform rarely touch on an essential part of Japanese corporate misconduct, which is significantly related to employees' identity with their organizations. Typically, recent business scandals in Japan have a 'collaborative' aspect of deception or information manipulation; with tacit approval and the sharing of secrets and responsibilities of misdeeds. For these reasons, organizational identity is recognized as a central issue in studies of business scandals in this country (Kiyomiya, 2006).

At the same time, Japanese business scandals seem to indicate misjudgment in either economic (capitalistic) rationalization or social responsibility. Such ethical imbalance in the workplace might be related to organizational identity and culture. Some articles of business journals and

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newspapers have pointed out that organizational cultures are wrong in the companies that have business scandals. However, little empirical research on individual work ethics and organizational culture has been conducted in Japan so far (Nakano, 2004). It is therefore necessary to collect data from people in the workplace and investigate whether the relationship between individual ethics and organizational culture are either inappropriate or appropriate in ways of doing business.

This paper analyzes Japanese organizational identity with regard to business scandals and company workplace moral in terms of both organizational level (organizational climate) and individual level (communicative behaviors). The purpose here is to explore the relationship of risk factors in daily communication and to investigate how corporate organizational identity is related to these risk factors of misconduct.

RELEVANT PERSPECTIVES IN JAPANESE CORPORATE MISCONDUCT

I would like to pay close attention to two areas of studies in order to consider the generation of corporate misconduct. The first is the role of organizational identity, which is currently one of the most active research fields in management. The second important issue is distortion of communication from a critical management perspective.

Organizational Identity: The Bright Side and Dark Side

Japanese organizations traditionally cultivate strong relationship with their employees, where this connection relies on employees' trust, faith, and loyalty to a company. Traditional Japanese employees are satisfied in their work life when they identify themselves with their organization, and they will often sacrifice themselves for the sake of their company. Such psychological connection between an organization and its employees is generally considered as organizational identity³ in Japan. When analyzing

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the cases of corporate misconduct, it is evident that fraudulent acts must be significantly related to members' sense of identity with their organizations; many cases are caused through communication process of collaborative practices. Thinking about why most employees do not reject deceptive communication but instead cooperate with deception, it is assumed that they conform to their organizational goals to struggle with the ethical dilemma and problems that arise. Cosequently their strong loyalty and dependence upon a company links their behaviors directly to organizational survival through implicit and/or explicit objectives.

Such a negative aspect of organizational identity is closely related with misconduct. Organizational identity comprises those characteristics of an organization that its members believe are central, distinctive and enduring (Albert & Whetten, 1985). Many management scholars have studied a positive aspect (or bright side) of organizational identity in the context of organization development, team-building, socialization, and so on. From a mainstream management perspective, identity and identification are powerful terms, root constructs in organizational phenomena (Albert, Ashforth & Dutton, 2000). As this paper investigates the role of organizational identity in business scandals, the focus of attention will be on the negative effects (dark side) of organizational identity. Two aspects of organizational identity, boths a bright side and dark side, are two sides of the same coin; as organizational identity may work either positively or negatively. In the next section, I describe several important conceptualizations of the dark side of organizational identity; concertive control, power, discipline, and hegemony, concepts which allow us to effectively interpret and understand Japanese corporate misconduct properly.

(1) Concertive Control and Unobtrusive Control

Tompkins and Cheney (1983) show a critical perspective to organizational identity in terms of decision-making. An individual may spontaneously act to identify himself/herself with an organization, so that he or she becomes open to persuasive communication by that organization. Therefore, "an organization can communicate decisional premises with relative ease to an individual who seeks to identify with the organization". (Tompkins & Cheney, 1983, p. 127). Tompkins and Cheney (1985) articulate unobtrusive control as well as concertive control in organizational identity. In concertive organizations, "the explicitly written rules and regulations are largely replaced by the common understanding values, objectives, and means of achievement, along with a deep appreciation for the organization's mission" (Tompkins & Cheney 1985, p. 184). Employees are more likely to accept the organization's premises and make decision consistent with organizational objectives when employees identify with the organization. The locus of control shifts significantly from management to workers who collaborate to create rules and norms that govern their behaviors (Papa, Auwal, & Arvind 1997). The desire of employees to conform to group objectives will be especially strong among members who share strong organizational identification and cohesiveness.

(2) Power, Discipline, and Hegemony

Foucault stresses that "power is not imposed from above (Mumby, 2001, p. 606)" and he opposes the notion of a 'sovereign' view of power. His postmodern perspective denies the dichotomy of simple power structure; such as capitalist relations of domination over workers. Foucault's concept is meant to capture the micro-techniques of power in use that rationalize not only individuals but also collective, organized bodies (Foucault, 1976, 1980). Foucault's concept of 'discipline' is important for understanding power and politics in organizations. It differs from ordinary notions of discipline that focuses on physical punishment and coercion. Contrasting such overt forms of discipline as a monarchy, Barker and Cheney's (1994) view of contemporary discipline points to "the unobtrusive control of

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individuals and collectivities that allow organizations to function 'normally'" (p.29). Barker and Cheney (1994) extend the conceptualizations of concertive control to the issue of power. There is a general tendency in modern society to expand the subtle means of control over the individual even as coercion becomes less prevalent (Barker & Cheney, 1994, p. 21). Nowadays a focal point of discipline is on the discourses⁴ that organizational members produce, reproduce, and transform in context. Throughout daily practices of communication, discipline functions unobtrusively, as organizational members control their values: agreeing upon what is normal and what is rational.

Power and discipline in organizational politics is related to conceptualizations of ideology and hegemony; two key concepts in neo-Marxist critiques of capitalism (Mumby, 2001). Ideology is defined as "taken for granted assumptions about reality that influence perceptions of situation and events" (Deetz & Kersten, 1983, p. 162), assumptions that structure our thoughts and controls our interpretations of reality. When organizational identity is recognized as a means of organizational control (Alvesson & Willmott, 2002), it is often linked with the concept of hegemony (Brown & Humphreys, 2006; Willmott, 2006; Kiyomiya, 2006). Drawing upon Gramsci (1971), hegemony is defined as "the ability of one class or group to link the interests and worldviews of other groups with its own, and is achieved through 'the colonization of popular consciousness'" (Mumby 2001, p. 589). This conceptualization places focus on development and dialectical process of 'collective will.' With these notions, it is important to consider the popular assumptions that organizational members have produced and are taken for granted. In addition, it becomes important to examine how power relationships are developed through organizational discourse. Thus, the workplace becomes the arena of organizational politics through discourse, where organizational identity is recognized as a means of

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domination and subjugation.

Communication Problems in Business Scandals

Critical approaches to organizational identity have already been shown in the previous section. It is important to consider how critical approaches differ from the mainstream or conventional approaches of management studies because these alternative perspectives provide different explanations in terms of the essentials of unethical or fraudulent acts. Whereas conventional perspectives recognize business scandals as accidents or management errors (lack of business ethics and misjudgment in risk management), critical perspectives suggest that corporate misconduct happens by neither errors nor misjudgment but through organizational hegemony in current capitalistic management systems.

(1) Distortion of Communication

Recently, Anand, et al (2005) addressed the idea that corruption scandals are related to organizational identity when they paid attention to the collaborative practices of specific cases. They state how corruption is close to and perpetuated in the workplace, citing Tony Bishop (President of the Association of Certified Fraud Examiners); "In the past, fraud was viewed as a rare event that happened to unlucky organizations. Now it is commonly accepted that fraud is taking place at virtually every organization, every business" (Cited in Anand, et al. 2005, p. 9). Anand, et al (2005) seek to understand the reasoning of such popularity from socialization processes and rationalization tactics. "Rationalizations and socialization practices allow perpetrators of unethical activities to believe that they are moral and ethical individuals, thereby allowing them to continue engaging in these practices without feeling pangs of conscience" (Anand, et al. 2005, p10).

These important factors of socialization processes and rationalizations

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are somewhat plausible, but their perspective is limited when viewed by the managerial premises of conventional management studies. Their reasoning of normalization is different from the critical perspective of ideology and hegemony. From a critical management perspective, organizational culture itself produces hegemony, as workplace values and communication are hegemonized by capitalistic organizations. Drawing on Habermas, critical management study emphasizes that communication is distorted in the workplace, and is essential in capitalistic management (Alvesson & Deetz, 2006; Willmott, 2003). A lot of corporate misconduct cases are related to the manipulation, distortion or concealment of information, and such communication distortion is common in the situations that lead to misdeeds. Therefore, fraudulent communication is not erroneous but inevitable in current capitalist organizations.

(2) Economic Rationality and Morality

It is often criticized that workers' morality is down in the workplace and that this leads to misdeed in business. Many business scandals contain some ethical dilemmas, for example, decisions about either efficiency or safety. Such an issue of morality is important for investigating corporate misconduct. Taking a historical view, Adam Smith assumed that morality was natural and did not require explanation; morality is always there (Fevre, 2000). According to Fevre (2000), conceptions of morality changed after WWII, and we now frequently find morality appearing as a means to an end defined by economic rationality. He recognizes that identity is comodified; identity becomes commodity, and morality was lost in the legitimacy of economic rationality.

From the perspective of economic anthropology, Polanyi (1977) provides a supportive theory. A central point in his critiques concerns the illusion of the present market society; non-market society has universal regard for human life but the current capitalistic society has become the

'over-marketized realm' (Polanyi, 1977). He addresses how "the market system violently distorted our view of man and society," and "these distorted views are providing one of the main obstacles to the solution of the problems of our civilization" (p. xvii). The historical evidence he cites indicates that market-mechanisms distort our framework of sense-making and falsifies our communication with one another. Polanyi's perspective well explains how an imbalance between economic efficiency and social responsibility emerges in corporate misconduct.

The essentials of corporate misconduct are linked to 'market mechanisms' which reduce morality, and are related to the current globalization process that introduces these market mechanisms everywhere in the world. Originally, the institution of the market has been limited in its historical context; "the phenomenon of exchange is universal only in a market-society" (Polanyi, 1977, p. xix). Currently, the market has become central in the modern age of globalization. Namely, "the economy did now consist of markets, and the market did envelope society" (Polanyi, 1977, p. 9). This is the core mechanism presently at work, so that business scandals are now inevitable in this society. The organizational members are socialized and rationalized in the dark side of the market that completely envelops our society.

COMMUNICATION RISKS AND MORAL DISORDER IN JCM PROJECT

In order to critically study corporate misconduct, I started a research project. This paper outlines a part of my entire project about Japanese corporate misconduct (JCM)⁵. This is a three-year research project, started in 2003, which contains three different studies⁶. In the first study, I conducted case studies of JCM. It is very difficult to obtain interview data from the companies that had scandals⁷, so I collected the secondary data of

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business scandals from newspapers and business journals, with the assistance of my research team members. The case analysis of this project allowed us to obtain a picture of JCM, leading to the second study, which attempts to understand how JCM is created and recreated in the Japanese industry. Our project utilizes both quantitative and qualitative approaches through questionnaires, and it contains four types of questions; (1) Likert scale questions to ask about organizational climate and individual communicative behaviors, (2) Likert scale surveys to ask business ethics, (3) questions about misconduct-simulation, and (4) open-ended questions about reactions of misconduct context.

Table 1: Five Cases of Japanese Corporate Misconduct

Case Name	Year Disclosed	Case Description					
Mass Milk Poisoning	2000	Major milk producer initially concealed milk- poisoning and could not handle internal and external corporate communication. It was accustomed with poor hygiene environments.					
Automobile Cover-up Scandal	2000	Auto-maker had hidden serious defect information for more than 30 years: it did not properly deal with customer's complaint and tried to avoid massive recall.					
Beef Mislabeling Scam	2002	Government's buy-back system for BSE problem was abused by a food company. It mislabeled domestic beef and disguised Australian beef as domestic meat.					
Nuclear Plant Accident	2004	Super-heated non-radioactive steam leaked from one of the reactors at a nuclear plant, leaving five workers dead and six seriously injured. The accident was blamed on pipes that had not been inspected for 28 years. Poor corporate communication.					
Revolving Door Death	2004	Brand new building at Tokyo had a fatal accident (six-years old boy died) with a big revolving door. There was poor communication among the building owner company, door production company, and a maintenance company.					

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This paper mainly uses the quantitative data (1). There are some important steps to extract constructs that affect JCM from the actual cases. In the process of case analysis, I organized a study group of twelve business people who have strong business background and various experiences and who are also interested in studying business scandals. As Table 1 shows, we look at five cases of JCM that significantly impacted on Japanese industries. While comparing and considering these actual JCM cases in terms of generative processes and the context of JCM, we identified some important communication constructs in the workplace. We call them 'communication risks' which may lead to misconduct. By our definition, they are usually neither harmful nor dangerous for organizational members, but they have potential risks for JCM in some situations and contexts. We classify them into two levels; the individual level and the organizational level. The organizational level concerns organizational culture and norms that members share while the individual level considers member's attitude and behaviors in organizations. These two levels influence each other. They are operationalized in the methods section later.

The objective of this survey is to measure the constructs of communication risks that are composed of these two levels. At the organizational level, eight constructs were extracted from case studies, while seven constructs were identified at the individual level. Some constructs overlapped in both levels. At the organizational level, the eight constructs are (1) group cohesiveness, (2) concertive culture/system, (3) organizational politics, (4) low supervisor-subordinate (S-S) interactions, (5) low intergroup interactions, (6) individual face-saving culture, (7) organizational face-saving culture, and (8) competitive system (refer to Table 2). Particularly, organizational identity is related to the constructs of group cohesiveness and concertive culture, so a high degree of these constructs may lead to organizational corruption whereby it turns into misconduct. In

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addition, we identify JCM as being related to distorted communication, such as organizational politics and communication problems in supervisor and subordinate relationships, as well as inter-group relationships: the constructs of (3), (4), and (5). Lastly, strong competitive systems and environments are identified in most cases of JCM. Under the influence of strong competition, market systems distort social relationships and they affect imbalance between economic rationalization and social responsibility, and therefore the construct to measure the strength of competition in a system: construct (8).

Table 2: Communication Risks in Organizational and Individual Levels:

Definition and Reliability

	Scales at ganizational Level	Definition	Alpha
(1)	Group Cohesiveness	Organizational culture's strong connective power among members and their tendency for organizational commitment to a group and team work	.82
(2)	Concertive Culture/- System	Organizational culture or systems that organizational members consent to the common values, objectives, means of achievement, and the organization's mission	.86
(3)	Organizational Politics	Organizational culture that members use tactics to rationalize and legitimate their aims or achieve their objectives	.85
(4)	Low Supervisor- Subor- dinate Interactions	Organizational culture of low frequency of interactions or poor communication between a supervisor and subordinates	.70
(5)	Low Inter-Group Interactions	Organizational culture of low frequency of interactions or poor information-sharing between divisions (groups)	.81
(6)	Individual Face-Saving Culture	Organizational culture that organizational members are concerned about a person's face; avoid loosing one's self image and maintain it when one confronts difficulty	.46
(7)	Organizational Face- Saving Culture	Organizational culture that members are concerned about their organizational face; avoid loosing a group's or company's image when it confronts difficulty	.73
(8)	Competitive System	Organizational culture or system that enhances competition among individual employees and em- phasizes individual achievements	.73

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	Scales at ividual Level	Definition	Alpha
(1)	Organizational Identity	Individual tendency for commitment to a group and positive or happy feelings about being a part of an organization	.79
(2)	Tacitness	Individual tendency that one keeps silent even though he/she has objections and one does not speak out when other group members try to consent to an organizational goal	.76
(3)	Upward Distortion of Information	Individual tendency that one manipulates and/or conceals information when he/she communicates with supervisors; in particular when one confronts difficulty or crisis	.80
(4)	Sectionalism	Individual tendency that one does not share information with other sections and he/she is not concerned about other sections	.83
(5)	Individual Face-Saving Behaviors	Individual tendency that one is concerned about one's own face; avoid loosing one's self image and maintain it when he/she confronts difficulty	.74
(6)	Organizational Face- Saving Behaviors	Individual tendency that one is concerned about organizational face which he/she belong to; avoid loosing one's group or company face when it confronts difficulty	.73
(7)	Competition Behaviors	Individual tendency that enhances competition against other employees and emphasizes individual achievements	.61

Communication risks at the individual level are (1) organizational identity, (2) tacitness, (3) upward distortion of information, (4) sectionalism, (5) individual face-saving behavior, and (6) organizational face-saving behavior, and (7) competitive behaviors. Similar to organizational level, the first two constructs are related to the issue of organizational identity. Particularly, the first one is directly relevant to organizational identity, and indicates positive feelings and happiness about being a part of an organization. Tacitness is an aspect of concertive control, since the organizational members remain relatively quiet in concertive systems of an organization. Upward distortion often occurs in the relationship between supervisors and subordinates in misconduct cases. Also, many cases show that the organizational members were not concerned about other groups or divisions, and that information sharing behaviors were very limited between different sections. These constructs of communication problems

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are related to communication distortion: Particularly construct (5) and (6). Face-saving is important in Japanese society. In some cases, individual face-saving can be remarkable, distorting and concealing important information. In addition, some organizational members commit misconduct in order to maintain their company's reputation. This phenomena is considered to be an organization's face-saving. We bring up both individual face-saving and organizational face-saving to analyze JCM: constructs (5) and (6). Lastly, individual competition is identified in JCM cases and competitive behaviors are measured in terms of personal preferences for competition.

These constructs can be used for analyzing JCM. In this paper, I aim to explore the effects of organizational identity. For this end, I attempted to quantitatively observe these constructs of 'communication risks.' I used a questionnaire to see interactions between organizational factors and individual factors and to examine how communication risks are related each other. Thus, the research questions are basically summarized below as three points in this paper.

RQ1: How do the factors of communication risks work with each other at both organizational and individual levels?

RQ2: How does organizational identity affect the other factors of communication risks? Particularly, is organizational identity related to other risk factors either positively or negatively?

RQ3: What factors of communication risks are more significantly related with ethical problems?

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METHODS

In this JCM research project, methodological pluralism (Sankey, 2001) was adopted, since I do not assume that it is sufficient to capture the complicated phenomena of JCM by a single approach or methodological monism. I doubt the necessity of a universal approach or methodological monism, but on the other hand, methodological pluralism allows us to more flexibly investigate complex social phenomena. Appropriate methods should be used in systemic and sequential approaches within the research project of JCM as a whole, while multiple methods should be accepted in a research plan.

In this paper, I plan to develop the discussion on the basis of quantitative observation, since communication risks might be measurable after careful consideration about JCM cases. In the quantitative measure, the relationship between organizational identity and distorted communication are clarified in terms of organizational and individual levels. In addition, we quantitatively observe moral disorder in business ethics, and it is operationalized in the following section.

Operationalization and Measurement of Scales

(1) Communication Risks (CR) Scales

The quantitative measure of CR was developed through psychometric procedures. It is measured as participants' cognition of culture at the organizational level and their communicative behaviors at the individual level. Organizational identity is an important part of CR and it is identified at both levels. At the organizational level, it appears as group cohesiveness and concertive systems of control. These seem to be organizational culture, which is often criticized in JCM cases (Kiyomiya et al., 2006). For the purpose of quantitative measurement, organizational culture should be operationalized as organizational climate⁸, so therefore the

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organizational level of CR is measured as members' perceptions of organizational culture related to misconduct in this paper. Similarly, the individual level of CR is operationalized for measurement purposes, and personal tendencies of behaviors and intentions are investigated in terms of communicative behaviors.

On the basis of operationalization, I initially created thirty-nine items of questions for the organizational level and thirty-six questions for the individual level of CR, since each construct planned to have more than four items in order to increase reliability. There were two steps taken to enhance the validity and reliability of these measurements. First, a study group of eight business persons and myself discussed face validity and rewrote questionnaire. Second, we had a pilot study to make sure validity and reliability. We distributed a longer version of questionnaires to around three hundred of businessmen and women, and fifty-seven responses were collected. We requested descriptive comments on this questionnaire, such as ambiguous parts, statements difficult to understand, suggestions for improvement, and so on. Also, the reliability of each construct was measured and we used it for improving our questionnaire. Many participants to this pilot test provided us with positive comments of encouragement, but they also pointed out that too many questions made them feel discouraged to answer. Taking their feedback into consideration, we reduced the number of questions. Finally, we had thirty three questions for the organizational level and twenty-six questions for the individual level of CR. Responses to these questions were presented with a seven-point Likert type scale.

(2) Moral Disorder (MD) Scales

MD was measured for considering the imbalance between economic rationality and social responsibility. It is used to assess the relationship between communication risks and ethical problems. In this paper, it is - 168 - (16) Toru Kiyomiya

operationalized as personal values and priorities in economic activities: relative emphasis on either sociality (moral, environment, etc) or economic rationality (profits, efficiency, etc). People often face dilemmas involving either economic gains or social benefits in a risky business opportunity. We asked participants to make such decisions in two ways. First, we provided semantic differential questions in which participants were asked to choose a number representing the degree of difference between two polarized words representing capitalistic economic rationality and social responsibility. Five paired items were created for this type of MD question, such as 'economic efficiency - corporate social responsibility', 'profits - social trust', and 'competition - collaboration.' This semantic differential scale has seven-point to choose from. I call this scale MD1 in this paper.

Another type of question provided multiple choices, but participants were asked to choose five from seven options and prioritize them from number one to number five. The seven options are profits, quality, environment, efficiency, cost, safety, and social contribution. These seven are ordered in terms of two polarized perspectives; 1) profits, 2) efficiency, 3) costs, 4) quality, 5) safety, 6) environment, and 7) social contribution. Each option given above has a point in reverse order. For example, the option of 'profits' has seven points, that of 'efficiency' has six points, and that of 'social contribution' has one point. The score is calculated as follows.

MD2 Score = Point of No.1 choice \times 5 + Point of No.2 choice \times 4 + Point of No.3 choice \times 3 + Point of No.4 choice \times 2 + Point of No.5 choice \times 1

In this scale, the maximum score is eighty five and the minimum score is thirty five. This MD scale is called MD2 in this paper. Both scores of MD1 and MD2 were used to examine moral disorder in this study.

Data Collection

A sampling strategy was carefully considered in order to collect

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responses from as many kinds of business persons as possible. We could obtain good cooperation with the Association of Risk Management Japan (ARMJ), and nation-wide as well as industry-wide data collection was conducted by ARMJ. There were two steps in data collection: a long version was collected in February 2006 and a short version was collected in May 2006. The first one used a paper-and-pencil type of questionnaire, and was distributed under the cover of ARMJ newsletter. Unfortunately, although about ten thousand questionnaires were distributed with prepaid return envelops, we received only 342 responses during the collection period of one and a half months. Due to the many question items and tough questions about ethical issues, it takes more than 30 minutes to complete, and this caused a low response rate. We decided to conduct additional data collection with a short version, in which we discarded the simulation-type of open-ended questions. This version was administered through the Internet⁹. ARMJ members were informed about the URL, so that the members could respond to this questionnaire only and return their answers easily. During the collection period of one month, more than 740 responses were collected. We checked the data carefully and found out that some responses overlapped because of people clicking twice on the same answer. The data was cleaned up, so that the effective responses became 727. We next statistically compared the two data sets, and decided to integrate them because the data came from the same sample and there was no significant difference in the two data sets. The total number of responses is 1069. This data is very rich in terms of quantity and quality.

ANALYSIS & RESULTS

One of the demographic features of our data is that it's maledominated. Eighty-four percent of participants are male and sixteen percent are female. These results reflect the gender structure of ARMJ. In - 170 - (18) Toru Kiyomiya

terms of statistical mean, participants' age is 44.8 years old, and that of years of experience is 16.1 years on average. They are relatively mature in their career and well experienced in their jobs. Seventeen percent of them have no subordinates, and the others have subordinates: an average in the number of subordinates is about seven. We asked a company size, and 45.3 percent of participant work at small-and-medium size companies (less than 300 employees) while 52.9 percent of them work at large companies. When we looked at the types of jobs, 26.4 percent of participants work in managerial jobs, 36.2 percent are technical or specialist personnel, and 18.1 percent are sales personnel.

Communication Risks

Validity of communication risks (CR) at both organizational and individual levels were examined in the pilot test and many sessions of group discussions. Reliability is examined for each construct of CR in the sample (n=1069). Cronbach's alpha (α) were yielded for reliabilities of CR in organizational climate and individual level scales. Many constructs are generally satisfactory in their reliability coefficient with more than .80 by Cronbach's alpha (see Table 2). There are some constructs which have less than .80: low S-S interactions ($\alpha = .70$), organizational face-saving culture ($\alpha = .73$), competitive systems ($\alpha = .73$) at the organizational level; tacitness ($\alpha = .76$), individual face-saving behaviors ($\alpha = .74$), organizational facesaving behaviors ($\alpha = .73$), and competitive behaviors ($\alpha = .61$) at the individual level. For these there are some concerns in reliability, that should be taken it into account to continue statistical analysis and discussion. The lowest alpha is yielded in individual face-saving culture ($\alpha = .46$), so it is necessary to consider this point although it is not taken away from the list.

Table 3: CR Scales and MD Scales: Mean and Standard Deviation

CR: Constructs at Organizational Level	Mean	SD
(1) Group Cohesiveness	4.41	1.23
(2) Concertive Culture/System	4.09	1.42
(3) Organizational Politics	3.49	1.49
(4) Low Supervisor-Subordinate Interactions	3.97	1.27
(5) Low Inter-Group Interactions	3.81	1.26
(6) Individual Face-Saving Culture	3.86	1.21
(7) Organizational Face-Saving Culture	3.64	1.12
(8) Competitive System	4.03	1.28
CR: Constructs at Individual Level		
(1) Organizational Identity	4.68	1.25
(2) Tacitness	3.52	.96
(3) Upward Distortion of Information	2.87	1.09
(4) Sectionalism	3.48	1.20
(5) Individual Face-Saving Behaviors	3.83	1.13
(6) Organizational Face-Saving Behaviors	3.88	1.10
(7) Competition Behaviors	4.23	.98
MD		
(1) Moral Disorder 1	2.99	1.08
(2) Moral Disorder 2	62.36	12.09

Statistical means for CR scales are shown in Table 3. These measures use a seven-point Likert scale, so four points marks the center. If CR scores increase more than four, it indicates higher risk. However, with all of the constructs at around four points, it shows a central tendency. When I look at the CR scales about group cohesiveness, concertive culture, organizational identity, and tacitness, the scores for these four scales of organizational identity issue are medium, so it indicates that the communication risks of organizational identity are relatively moderate.

Similarly, when the five CR scales about communication distortion are observed, their average communication risk are relatively moderate. However, a scale of 'upward distortion of information' has a statistical mean of 2.87, so it is the lowest and indicates low risk in information distortion. Thus, communication distortion is not observed in this data. Rather, communication does not seem distorted but seems normal in terms of the CR scales.

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The four CR scales about face-saving show a similar tendency to the previous ones, and so do the two CR scales of competition. As a whole, most of the CR scales indicate moderate scores. This indicates that the survey participants view of communication risks are not high but low in this data set. In other words, perceptions of communication risks are not zero and still demonstrate potential as long as CR scores do not show low scores. If risks are low in organizational communication, it is reflected on low scores in CR scales.

Table 4: Correlation Matrix: CR Scales at Organizational Level

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	MD1
(1)	Group Cohesiveness									
(2)	Concertive Culture/System	45**								
(3)	Organizational Politics	44**	.77**							
(4)	Low S-S Interactions	46**	.21**	.23**						
(5)	Low Inter-Group Interactions	54**	.39**	.38**	.46**					
(6)	Individual Face-Saving	15**	.28**	.27**	.11**	.12**				
(7)	Organizational Face-Saving	54**	.64**	.67**	.32**	.51**	.37**			
(8)	Competitive System	57**	.60**	.63**	.38**	.51**	.29**	.72**		
	MD 1	13**	.10**	.11**	.07*	.11**	.10**	.18**	.11**	
	MD 2	04	03	03	.03	.03	.00	.04	.03	.44**

^{*} Correlation is significant at the 0.05 level (2-tailed).

A Pearson correlation coefficient was calculated for CR scales, and a correlation matrix was examined for both organizational and individual levels. First, looking at the organizational level, I am going to analyze each matrix in terms of ① organizational identity, ② communication distortion, ③ face-saving, and ④ competition. In the measurement of organizational

^{**} Correlation is significant at the 0.01 level (2-tailed).

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identity, it is interesting that group cohesiveness has a strong negative correlation with other constructs (see Table 4). Except for individual face-saving culture, it has more than .40 in strength. On the other hand, concertive culture has a positive association with all other constructs. Particularly, it has the strongest correlation coefficient (r = .77) with organizational politics. Cohesiveness is considered as a positive perception in organizational identity, while participants don't prefer concertive culture. Such reverse relationships between these two emerge in the matrix, so cohesiveness is a favorable cultural factor that has potential power to remedy communication distortion, face-saving, competitive systems. Concertive culture, on the other hand, has the potential power to facilitate other communication risks whereas organizational politics may be strengthened by concertive culture in particular. Thus, these two cultural aspects of organizational identity have a strong influence with other CRs.

In the measurement of communication distortion, low intergroup interactions show a strong positive association with low supervisor-subordinate (S-S) interactions (r = .46). It appears that low levels of interaction in organizational culture influence each other in intergroup as well as interpersonal relationships. In the measurement of face-saving, individual face does not have a correlation with other CRs, but organizational face has a relatively strong association with concertive culture, politics, and intergroup interactions. In particular, the relationship between organizational face and competitive systems has the second highest coefficient (r = .72). The organizational aspect of face-saving culture has a powerful influence to other CRs. In addition, competitive system demonstrates a similar trend to organizational face-saving culture.

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Table 5: Correlation Matrix: CR Scales at Individual Level

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	MD1
(1)	Organizational Identity								
(2)	Tacitness	21**							
(3)	Upward Distortion	38**	.47**						
(4)	Sectionalism	39**	.39**	.39**					
(5)	Individual Face-saving	.10**	.14**	.03	.01				
(6)	Organizational Face-saving	.61**	07*	20**	21**	.41**			
(7)	Competitive Behavior	.21**	10**	16**	12**	.33**	.33**		
	MD 1	16**	.15**	.18**	.16**	.12**	04	.20**	
	MD 2	11**	.09**	.09**	.13**	.13**	03	.25**	.44**

^{*} Correlation is significant at the 0.05 level (2-tailed).

Here a correlation matrix is examined for individual level (see Table 5). The Pearson correlation coefficient seems to be moderate, and these scores are lower than the matrix of organizational level. There are some informative results found in this data set as follows. In the measurement of organizational identity, negative associations with other CRs (tacitness, upward distortion, sectionalism) can be identified in organizational identity scale (-.21, -.38, -.39 respectively). This tendency is similar to what we found with cohesiveness scale at the organizational level. However, organizational face-saving behaviors and competitive behaviors have positive and strong correlation (.61 and .21 respectively). Particularly, the correlation coefficient between organizational identity and organizational face-saving shows the highest value in the matrix. In addition, the tacitness scale has a relatively strong correlation with upward information distortion and sectionalist behaviors. Thus, strong organizational identity

^{**} Correlation is significant at the 0.01 level (2-tailed).

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facilitates organizational face-saving behaviors, while tacitness facilitates communication distortion. On the other hand, strong identity may remedy tacitness since their relationship is negative. Namely, if someone has strong organizational identity, he or she may not keep silent but speaks out with objection in case of injustice and misconduct. In the measurement of communication distortion, the relationship between sectionalist behaviors and upward information distortion has relatively strong correlation, (r = .39). The individual face-saving behavior scale has no strong correlation, but the organizational face-saving scale (r = .41) and competition scale (r = .33). The competitive behavior scale shows a moderate correlation with individual face-saving (r = .33). Thus, in this quantitative observation, CR scales of organizational identity and tacitness appear to have a relatively strong impact on other CRs.

Table 6: Correlation Matrix of CR: between Organizational Climate and Individual Behaviors

	Group Cohesive	Concertive Culture	Org. Politics	Low S-S Inter.	Low Intergroup	Ind. Face	Org. Face	Comp. System
Org. Identity	.54**	37**	39**	33**		12**	48**	53**
Tacitness	13**	.12**	.08**	.07*	.13**	09**	.11**	.12**
Upward Distortion	26**	.13**	.15**	.27**	.26**	.02	.21**	.23**
Sectionalism	19**	.13**	.11**	.12**	.28**	05	.14**	.19**
Individual Face-saving	.03	.07*	.04	05	03	.07*	.03	03
Organizational Face-saving	.36**	22**	21**	21**	31**	05	31**	39**
Competitive Behaviors	.15**	03	.01	14**	12**	.03	06	10**

^{*} Correlation is significant at the 0.05 level (2-tailed).

In Table 6, the correlation coefficient is examined for the relationship between organizational and individual variables. The strongest correlation - 176 - (24) Toru Kiyomiya

emerges between organizational identity and cohesiveness scales (r=.54). These may have a mutual impact on each other since it shows a positive correlation. The organizational identity scale, on the other hand, has a moderate negative association with concertive culture (-.37), organizational politics (-.39), low S-S interactions (-.33), low intergroup interactions (-.44), organizational face (-.48), and competitive systems (-.53). Clearly, organizational identity has strong associations with most cultural aspects of CRs. In terms of organizational level, there are some CR scales that have mild and weak correlations, such as cohesiveness, competitive system, organizational face-saving culture, and low intergroup interactions.

Moral Disorder

In order to assess people's perceptions of ethical balance between economic efficiency and social responsibility, we administered two types of scales (MD1 and MD2). Reliability is examined for MD1 on the sample (n=1069) since MD2 does not take such psychometric procedure. Cronbach's alpha (α) was yielded for reliabilities of MD1 (α =.66) that is composed of four items (seven-point Likert scale). It is not high, but is used as one of the measurement instruments because two instruments enhance measurement. The statistical mean of MD1 is 2.99 (SD=1.08), so it shows that participants' choices are relatively inclined toward the social responsibility side (see Table 3). However, the statistical mean of MD2 is 62.36 (SD=12.09). Since the middle of this score is 60, it shows an opposite tendency to MD1; participants' choices are relatively inclined to the side of economic efficiency. It is therefore necessary to consider the gaps between MD1 and MD2.

Both MD1 and MD2 are observed in correlation with the CR scales. In terms of organizational level (See Table 4), MD1 has a very weak

^{**} Correlation is significant at the 0.01 level (2-tailed).

correlation with other CR scales, but has no correlation is identified with MD2. The correlation between MD1 and Organizational face-saving culture (r = .18) is weak but has the highest coefficient. In terms of individual level, MD1 has a weak association (from .12 to .20) with most CR scales (See Table 5), except for individual and organizational face-saving behaviors. MD2 has a similar but little bit weaker tendency (from .09 to .25). An interesting result is identified for the organizational identity scale, which shows only negative correlation coefficients (-.16 for MD1 and -. 11 with MD2). Moreover, the scale of competitive behaviors shows moderate strength but is the highest of seven (.20 in MD1 and .25 in MD2). Participants' values and ethical choices in either economic rationality or social responsibility are more or less linked with their behaviors in

DISCUSSION & IMPLICATION

competition, rather than other communicative behaviors.

In this last section, I will analyze the quantitative data for this JCM project to investigate how organizational identity influences other factors of communication risks and ethical problems in the workplace. There are some important findings and limitations in this quantitative study.

When considering Research Question 1, the CR scales make an important contribution from a quantitative perspective. Organizational identity has significant relationships with other communication risks at both organizational and individual levels. In terms of correlation coefficients, the association with CR scales at the individual level appear to be both positive or negative. Here, negative relations with communication risks can signify a good sign or a remedy for deterring misconduct. In other words, when organizational cohesiveness works well in an organizational culture, it may help to deter misconduct. On the other hand, concertive culture and organizational politics are recognized as having a

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dangerous association in organizational culture. Similarly, organizational face-saving culture and competitive systems are another dangerous combination. These four CRs (concertive culture, organizational politics, organizational face-saving culture, and competitive systems) should be carefully examined in organizational culture. These risk factors have mutual effects which serve to escalate each other, so that they can create a negative synergy that leads to business scandals when these factors are combined.

At the individual level, organizational identity works as a remedy to a certain degree. Namely, people can speak out if a company makes a dangerous decision. Thus, considering Research Question 2, organizational identity has a determent role over the other communication risks, in certain cases. Neverthless, there is a great risk when it is combined with organizational face-saving and competitive behaviors. Here, organizational identity works as a driving force to escalate risks when the factors of face-saving and competitive behaviors are in play. In short, paradoxically, organizational identity is both a crucial factor for determent and an accelerator for communication risks of business scandals.

Moreover, there are significant risks among 'tacitness', 'upward information distortion', and 'sectionalism' that have emerged in JCM cases (Kiyomiya et al., 2006). When corporate misconduct has involved deceptive communication (information manipulation and concealment), tacitness enhances the communication risks of information distortion and sectionalist behaviors. The dangerous triangle among these three factors (tacitness, upward information distortion, and sectionalism) has mutual effects which facilitate communication risks and may lead to misconduct.

Clearly, CR Scale is useful and effective as a quantitative analysis tool in JCM. It can be used to assess a specific company and is an effective instrument for measuring organizational change and development in a

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practical sense. While is still under development as a sophisticated diagnostic tool; individual and organizational levels are used as X-Y axes and scores are plotted on them. Although the CR Scale is a useful instrument, it has its limitations. In particular, when considering the issues about distorted communication, the data shows that communication distortion scales have low risks. If data is collected for a single organization, the result may change. In addition, it is difficult for a quantitative approach to measure the dynamic aspects of communication risks which rely highly on context. Distorted communication can be identified with different approaches, such as qualitative methods. Qualitative data can supplement the limitations of quantitative analysis.

A part of my conclusion is that corporate misconduct is widespread and usual. Although this sounds similar to a claim by Anand, et al (2005), I pay attention not to socialization processes but to the permeation of market mechanisms. If corporate misconduct results from socialization processes and rationalization tactics, it is considered as error or mistake of management. If misconduct is related to market mechanisms, it is not only usual but also self-evident in capitalism as a culture. In other words, misconduct is neither an error nor a mistake in modern management but arises naturally in capitalistic market systems. When competitive culture and behaviors are connected with organizational face-saving, it indicates that Japanese organizations emphasize corporate reputation and saving face in accordance with competitive gains. There is positive effect with enhancing team efforts but simultaneously there is potential risk that can lead an organization to wrongdoing for the sake of organizational competitive gaining. Thus, I can conclude that market mechanisms transformed organizational identity negatively through protective corporate reputation behaviors and organizational face-saving in Japan.

The MD Scales show two different indications; MD1 shows that

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participants emphasize the social aspect of organization but MD2 shows that they tend to choose economic rationalization. In regards to this quantitative measure, I could not reach a clear conclusion, unfortunately. I recognize that MD Scale should be improved in the future. However, even though these two scales show slight differences, in multiple choices of MD2, respondents at least choose the options of economic rationality as a higher priority. It is small evidence that people are inclined to behave on the basis of economic efficiency, which may lead to JCM cases. Alternative research may more clearly illustrate the effects of an imbalance between sociality and economic rationality.

Moreover, some constructs of CR have somewhat low reliability, so that questionnaires must be improved through repetitive studies. In this paper, I explored whether people's daily communication embraces some risks for corporate misconduct. We found that some factors of communication risks are very significant driving forces, such as the triad of tacitness, upward information distortion, and sectionalism at the individual levels. At the organizational level, such factors as concertive culture, organizational politics, organizational face-saving culture, and competitive systems emerged as important communication risks when they were combined. Finally, organizational identity has the role of determent when it leads to whistle-blowing, but it works negatively with face-saving factors and competitive behaviors. It is therefore both a key factor for determent and a driving factor for communication risks of business scandals.

My ongoing research project of OCM continues to observe modern management critically with the goal of helping to improve society and organizations.

DEDICATION

This paper is dedicated to my great colleague, Professor Tadasu Todd Imahori, who died in July 2009. I hope that this paper will make a small contribution to the field of communication studies that Prof. Imahori had always had great concern with.

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NOTE

- ¹ An earlier version of this paper was presented at the annual convention of the European Academy of Management (EURAM), Paris, in 2007.
- ² It is interesting that such similar phenomena have emerged across industrial nations (Ministry of Economy, Trade and Industry (METI, 2004), and many Western countries acknowledge that serious corporate misconduct impacts on industries.
- ³ There is a similar term, organizational identification, and here I do not substantially distinguish these terms.
- ⁴ "Discourses are thus texts and communicative practices that function within certain 'truth games' (rules for what counts as true or false), defining the subject and submitting him or her to processes of normalization" (Mumby, 2001).
- ⁵ It is supported, in part, by MEXT (Ministry of Education, Culture, Science, Sports, and Technology), KAKENHI 15530360.
- This paper results from the second study. The third study is not described here due to page limitation. A focus of the third study is on various issues of corporate social responsibility, and we collect data from top executives of small and medium-sized enterprises by questionnaire.
- ⁷ Yukijirusi Nyugyou (Snow Brand Milk Products Co.) provided me an interview opportunity (Kiyomiya *et al.*, 2006).
- ⁸ There have been important discussions about differences between organizational culture and climate (Denison, 1996). While organizational culture is often recognized as the symbolic nature of shared meaning, organizational climate is recognized as measurable in members' perception levels.
- ⁹ We were afraid that the same persons answered both versions of questionnaires. Therefore, ARMJ announced not to respond if one had already answered in the first survey.

REFERENCE

- Albert, S., Ashforth, B. E., & Dutton, J. E. (2000). Organizational Identity and Identification: Charting New Water and Building New Bridges.

 Academy of Management Review 25(1): 13-17.
- Albert, S., & Whetten, D. A. (1985). Organizational Identity. In L. L. Cummings & B. M. Staw (Eds.), Research in Organizational Behavior (Vol. 7). Greenwich, CT: JAI.
- Alvesson, M., & Deetz, A. S. (2006). Critical Theory and Postmodernism Approaches to Organizational Studies. In S. Clegg, C. Hardy, T. B. Lawrence & W. R. Nord (Eds.), *The Sage Handbook of Organization Studies* (2nd ed., pp. 253-283). London: Sage Publication.
- Alvesson, M., & Willmott, H. (2002). Identity Regulation as Organizational Control: Producing the appropriate individual. *Journal of Management Studies*, 39(5), 619-644.
- Anand, V., Ashforth, B. E., & Joshi, M. (2005). Business as Usual: The acceptance and perpetuation of corruption in organizations. *Academy of Management Executive*, 19(4), 9-23.
- Archer, L., & Fitch, K. L. (1994). Communication in Latin American MNOs. In R. L. Wiseman & R. Shuter (Eds.), *Communicating in multinational organizations*. Thousand Oaks, CA: SAGE Publications.
- Arimori, T. (2003). Nihon-kigyo-no-moraru-hazado-shi (History of moral hazard in Japanese companies). Tokyo: Bungeisyunjyu.
- Barker, J. R. (1999) *The Discipline of Teamwork*. Thousand Oaks, CA: Sage Publications.
- Barker, J. R., & Cheney, G. (1994) The Concept and the Practices of Discipline in Contemporary Organizational Life. *Communication Monographs*, 61: 19-43.
- Brown, A. D., & Humphreys, M. (2006). Organizational Identity and Place:

 A discursive exploration of hegemony and resistance. *Journal of*

- Management Studies, 43(2), 231-257.
- Deetz, S. A., & Kersten, A. (1983) Critical Models of Interpretive Research, in L. L. Putnam & M. E. Pacanowsky (eds) Communication and Organizations: An Interpretive Approach. Beverly Hills: CA: Sage Publications.
- Demise, N. (2004). Corporate Ethical Behavior and Corporate Governance. Organizational Science, 37(4), 33-42.
- Denison, D. R. (1996). What is the Difference between Organizational Culture and Organizational Climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, 21, 619-654.
- Fevre, R. (2000). The Demoralization of Western Culture: Scoial theory and the dilemmas of modern living. London and New York: Continuum.
- Foucault, M. (1976) *Discipline and Punish* (A. Sheridan, Trans.). New York: Vintage.
- Foucault, M. (1980) *Power/Knowledge* (G. Gordon, L. Marshal, J. Mepham & K. Soper, Trans.). New York: Pantheon.
- Gramsci, A. (1971). Selections from the Prison Notebooks (Q. Hoare & G. Nowell Smith, Trans.). New York: International Publishers.
- Kiyomiya, T. (2006). Transformation of Organizational Identity in Corporate Hegemony: Critical perspectives to japanese corporate misconduct, *Annual Conference of International Communication Association*. Dresden, Germany.
- Kiyomiya, T., Matake, K., & Matsunaga, M. (2006). Why Companies Tell Lies in Business: A Japanese case in the food industry. In S. May (Ed.), Case Studies in Organizations: Ethical perspectives and practices (pp. 287-304): Sage Publications.
- Laclau, E., & Mouffe, C. (2001). Hegemony and Socialist Strategy: Towards a radical democratic politics (2nd ed.). London: Verso.

- METI. (2004). White Paper on International Trade, 2004. Tokyo, Japan: Ministry of Economy, Trade and Industry.
- Mumby, D. K. (2001). Power and Politics. In F. M. Jablin & L. L. Putnam (Eds.), *The New Handbook of Organizational Communication* (pp. 585-623): Sage Publications.
- Nakano, C. (2004). Ethical Decision-making of Individuals in an Organization: Promoting empirical studies on organizational ethics in japan. *Organizational Science*, 37(4), 14-23.
- Papa, M. J., Auwal, M. A., & Arvind, S. (1997) 'Organizing for Social Change within Concertive Control Systems: Member Identification, Empowerment, and the Masking of Discipline'. Communication Monographs 64(3): 219-249.
- Polanyi, K. (1977). The Livelihood of Man. New York: Academic Press.
- Sankey, H. (2001). Methodological Pluralism, Normative Naturalism and the Realist Aim of Science. In P. Nola & H. Sankey (Eds.), After Popper, Kuhn and Feyerabend: Recent issue in theories of sceintific method, australasian studies in history and philosophy of science (pp. 1-33). Dordrecht, Netherland: Kluwer Academic Publishers.
- Tompkins, P. K., & Cheney, G. (1983). 'Account Analysis of Organizations:

 Decision Making and Identification', in L. L. Putnam & M. E.

 Pacanowsky (eds.), Communication and Organizations: An Interpretive

 Approach, pp. 123-147. Beverly Hills: Sage Publications.
- Tompkins, P. K., & Cheney, G. (1985). 'Communication and Unobtrusive Control in Contemporary Organizations', in R. D. McPhee & P. K. Tompkins (eds) *Organizational Communication: Traditional Themes and New Directions*, pp. 179-210. Beverly Hills, CA: Sage Publications.
- Willmott, H. (2003). Organizational Theory as a Critical Science. In H. Tsoukas & C. Knudsen (Eds.), Oxford Handbook of Organizational Theory (pp. 88-112). Oxford: Oxford University Press.

Organizational Identity in Communication Risk: Studies of Japanese Corporate Misconduct (33) - 185 -

Willmott, H. (2006). *Identities in Organizations: From interpretive to critical analysis*. Unpublished Paper, Cardiff University, Cardiff.