The Diffusion and Evolution of Environmental Management Concepts in Civil Aviation

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ABSTRACT

This thesis expands current understanding of the process through which new management concepts diffuse in organizational fields. The thesis examines how environmental management concepts have diffused in civil aviation, an industry which has evolved from a praised icon of globalization to a targeted symbol of climate change over the last decade.

In the first phase of the study, qualitative data were gathered through participation at industry conferences and events, supplemented by 35 semi-structured interviews with informants representing diverse actors in the field of civil aviation. This fieldwork was used to generate theory on the process through which the concept of sustainability is being interpreted and adopted within this industry. The second phase of the study is a systematic analysis of archival data from a trade publication over the time period 2000-2008. Structured content analysis methods were employed to track evolution in the framing of environmental management issues at the level of the industry.

The study expands current understandings of diffusion by (a) describing a process of *naturalization*, through which a new concept is being interpreted and an industry-level ethos is being reaffirmed; and (b) specifying some conditions leading to divergent diffusion, characterized as a situation in which multiple understandings of a management concept continue to coexist throughout diffusion. The study thus contributes to current institutional theories on management concept diffusion through a

process perspective describing the interpretive mechanisms underlying diffusion and through conceptualization of the conditions and attributes of divergent diffusion.

ABRÉGÉ

Cette thèse contribue à une meilleure compréhension du processus par lequel les nouveaux concepts de gestion se propagent dans les champs organisationnels. La thèse examine la diffusion des concepts de management environnemental au sein de l'aviation civile, une industrie qui était l'icône de la mondialisation il y a une dizaine d'années, et qui est devenue la cible d'activistes et un symbole du changement climatique aujourd'hui.

Dans la première phase de l'étude, des données qualitatives ont été recueillies par une observation participante dans des conférences et des évènements organisés par l'industrie, puis par 35 entrevues individuelles avec des informateurs représentant divers acteurs stratégiques dans le champ de l'aviation civile. Ce travail de terrain a été utilisé pour générer une théorie du processus d'interprétation et d'adoption du concept de développement durable au sein de cette industrie. La seconde phase de l'étude est une analyse systématique de données d'archives provenant d'un journal spécialisé, sur la période 2000-2008. Des méthodes d'analyse de contenu ont été utilisées pour retracer l'évolution des termes employés pour décrire et « cadrer » les problèmes environnementaux au niveau de l'industrie.

L'étude contribue aux théories actuelles de diffusion, (a) en décrivant le processus de *naturalisation*, par lequel le nouveau concept est interprété, et un ethos de l'industrie est réaffirmé; et (b) en spécifiant quelles conditions mènent à une diffusion divergente, caractérisée par une situation dans laquelle de multiples compréhensions d'un même concept de gestion continuent à coexister tout au long de sa diffusion. L'étude contribue ainsi aux théories institutionnelles sur la diffusion des concepts de

gestion en proposant une perspective centrée sur le *processus*, décrivant les mécanismes interprétatifs qui sous-tendent la diffusion, et en conceptualisant les conditions et les attributs d'une diffusion divergente.

DEDICATION

For Alejandra

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Chapter 1. INTRODUCTION

"Our biggest challenge in this new century is to take an idea that seems abstract -- sustainable development -- and turn it, too, into a daily reality for all the world's people"

Kofi Annan, March 14, 2001.

Periodically, a novel concept enters the world of organizations and transforms entire industries. Previous examples include Quality, Workplace Safety, and Equal Employment Opportunity. Those abstract concepts often end up being translated into concrete practices that can be implemented in organizations. For example, the concept of Quality has been supported by a very large series of tools and practices such as Quality Circles, Design of Experiments, TQM, and Six Sigma. Workplace Safety is linked to organizational tools (incident tracking, cause analysis, etc) as well as legislation. Equal Employment Opportunity has become subsumed under the umbrella concept of Diversity and attached to a range of practices meant to eliminate discrimination against minority groups and women.

This thesis aims at expanding our understanding of the complex mechanisms through which such new management concepts spread into

industries. A large part of the research on the diffusion of management concepts has considered them as *objects*: items that are produced on one end, transferred and moved around by some actors (e.g., consultants), and used or applied at the other end by practitioners. Scholars sometimes talk about a "market" for management knowledge, governed by supply-and-demand dynamics (Abrahamson, 1996; David & Strang, 2006). While this perspective is useful to describe the dynamics of spread, it also detracts from other questions, such as "What exactly diffuses?" and "How does 'it' change and evolve?" Such questions have received too little attention in the literature and are presently under theorized. Studying the diffusion of *concepts* rather than technical practices is likely to uncover the rich work of interpretation and contests over meaning constitutive of the diffusion process. One consequence of the contestation inherent in diffusing managerial ideas is that researchers need new conceptual and methodological tools to adequately capture such complex dynamics: the classical diffusion perspective, which helped illuminate the mechanisms of diffusion of technical practices, is limited when it comes to studying amorphous and malleable ideas and concepts that are subject to constant redefinition and evolution.

The conceptual models and methodologies developed by researchers in the *social movements* tradition hold great potential to help us understand how new managerial models make their way into organizations. For example, previous work in this literature has described the framing contests that happen within and between movements (Benford & Snow, 2000) around the

interpretation and naming of issues and proposed solutions. The organizational literature on practice diffusion could greatly benefit from the attention to contention and framing contests provided by a social movement perspective (Rao, 1998; Rao, Morrill, & Zald, 2000). This thesis contributes to a recent stream of research that has aimed at expanding and enriching the organizational theory literature with theoretical developments achieved in the social movements literature in sociology.

Empirical terrain: Environmental management concepts and sustainability

Environmental issues and the associated actions engaged in by organizations on this front represent an interesting terrain to observe dynamics of new management concept diffusion and evolution. Environmental issues are often at the center of disputes between various groups and actors, and they are subject to an intense activity of conceptual elaboration, by targeted organizations as well as contestant groups. New concepts related to managerial action on environmental issues have emerged in recent years, such as sustainability, corporate social responsibility, environmental management systems, etc. Through the emergence of these management concepts, environmental issues - and the associated actions engaged in by organizations - are theorized and defined in a novel way. Links between previously unconnected issues are forged, and older associations are abandoned. This process of concept diffusion is not just a rhetorical phenomenon; as problems are defined, solutions are sketched and lines of actions are determined, with very tangible consequences. Existing

theories of diffusion of management ideas only provide a partial understanding of the complex mechanisms through which new concepts make their way into organizational fields and contribute to their reconfiguration around new issues and debates.

Specifically, the elusive concept of *sustainability* represents a great contemporary opportunity to study processes of new management concept diffusion. Although the notion is not very new, it is only recently that most organizations have started to come to terms with it in order to render their operations more "sustainable." One noted difficulty is linked to the vagueness of the concept (Mebratu, 1998; Robinson, 2004), which leads to multiple and possibly conflicting interpretations (Fergus & Rowney, 2005). Thus, implementing "sustainability" is a challenge for organizations that need to develop an understanding of what this concept means, and then figure out how to concretize it for their operations. Rather than a clearly identifiable state, becoming sustainable is a process that requires learning and experimentation. As the concept of sustainability is used within organizations, over time, its conceptualization evolves, and with it the concrete actions supporting sustainability.

So how do amorphous and malleable concepts like *sustainability* evolve over time? Competing theories of the spread of management concepts would lead to opposite predictions. On the one hand, institutional theorists have argued that organizational practices tend to lose diversity and become increasingly uniform over time, as more and more organizations adopt institutionalized forms

of the practice (Westphal, Gulati, & Shortell, 1997). Similarly, researchers interested in the diffusion of "umbrella constructs" (Hirsch & Levin, 1999) have argued that such concepts evolve from initially broad formulations to increasingly refined definitions, through the influence of challenges on their validity and distinctiveness (Hirsch and Levin 1999). But on the other hand, some communication scholars have argued that the "strategic ambiguity" (Giroux, 2006) of such umbrella constructs allows diverse interpretations to coexist at any given time in different contexts. As the concept spreads across industries and organizations, its strategic ambiguity may then remain intact, and it may even expand as the concept is used by a growing group of organizations with different meanings.

This thesis contributes to current theories of management concept diffusion by examining the diffusion of the concept of sustainability within the civil aviation industry, and addressing two major theoretical questions. First, it explores the *interpretive mechanisms underlying diffusion*, by considering how the malleable concept of sustainability is currently being interpreted by various industry actors. Second, the thesis explores the *evolutionary dynamics of diffusion*, by considering how environmental issues have been framed over the last decade in the civil aviation sector, an industry that has long been subject to intense scrutiny and criticism by various environmental groups for its environmental impact.

Rationale for the investigation

This research is important on several accounts. First, institutional scholars have called for studies opening the "black box of diffusion" (Lawrence & Suddaby, 2006), and investigating its micro dynamics (Schneiberg & Clemens, 2006). The thesis partly relies on the interpretive study of individuals and organizations engaged in the promotion and diffusion of new concepts in this industry. Second, scholars have criticized the strong emphasis of institutional theory on structures, and have called for studies investigating the meaning component of diffusing practices (Zilber, 2006). The thesis answers this call and examines the ideational dimension of diffusing concepts, as opposed to the more structural elements of management practices. Finally, most of institutional theory has adopted a retrospective view on institutional processes. While it is clearly easier to understand past events, there is also a strong need to understand institutional processes as they unfold in the present (Lawrence & Suddaby, 2006). The chosen object of study is a contemporary trend: it is happening at this moment in organizations. As such, it offers the opportunity to observe firsthand the diffusion of a new concept in organizations.

This research also has practical importance because it investigates a current phenomenon: many industries and organizations are presently trying to figure out what sustainability means to them, and the organizational issues linked to the environment are likely to grow in importance in the future. Kofi Annan's quote which opened this introduction provides both a theoretical hook and an inspiration for this study. How to translate sustainability in a meaningful way in

organizations not only poses intriguing theoretical questions; it is also an important societal challenge, representing an opportunity to reconcile organization theory with social relevance (Stern & Barley, 1996).

Structure of the thesis

The thesis is composed of the following sections: Chapter 2 lays out the conceptual foundations of the investigation by reviewing relevant research on the spread of management concepts and practices, as well as the framing literature in social movements scholarship, and makes the case for building a dialogue between both streams. Chapter 2 also justifies the choice of empirical terrain for this investigation and states the research questions that guided the inquiry. Chapter 3 describes the research design, and details the methodological approach followed. Chapter 4 sets the stage for this investigation with an ethnographic account of my encounter with the field of aviation, resulting from my attendance at several industry conferences and events. Chapter 5, building on interview data, presents an inductive analysis of three interpretive mechanisms of concept evolution, which together contribute to the naturalization of management concepts. Thus, both chapters 4 and 5 take a "snapshot perspective" on the diffusion of sustainability within aviation, and aim at exploring the *interpretive mechanisms* underlying the diffusion of this new concept, in situ. In contrast, Chapters 6 and 7 take a longitudinal perspective, and broaden the scope of attention from the concept of sustainability to environmental issues more generally. Chapter 6, also based on interview data, focuses on the role of issue

evolution and field transformation as two intertwined processes which have a powerful influence on the diffusion dynamics of management concepts. Chapter 7 explores the coevolution of environmental issues and frames of environmental action in aviation over the past decade, through a systematic content analysis of media articles in a specialized trade publication. Finally, Chapter 8 synthesizes the empirical findings of this thesis, lays out a conceptual model of concept diffusion and evolution, and discusses its implications for current theories of concept diffusion.

Chapter 2. THEORETICAL BACKGROUND

Many studies have investigated how new management concepts and practices emerge and spread among organizations. In this large topic, five areas of research can be distinguished analytically. First of all, studies using the classic *diffusion* perspective have focused on the spread of concrete organizational *practices*, and more specifically on the mechanisms leading to the adoption versus non-adoption of organizational practices. A second specific stream of research has emerged within this diffusion perspective to explain why management *fads and fashions* come and go across organizations. More recently, a third stream of research has emerged using the perspective of *translation*, which rejects previous assumptions permeating the diffusion perspective, and instead focuses on the subtle evolution undergone by circulating practices, and emphasizes the role of alliances and power in those mechanisms of transformation. A fourth area of research has focused exclusively on the spread of the least concrete elements composing a managerial practice: keywords or "*umbrella concepts,*" with the goal of understanding the specific dynamics of semantic evolutions. Finally, a limited number of authors have tried to study the spread of complete managerial *paradigms* through their various elements (ideologies and practices) across various societies. After discussing some central aspects of these areas of research sequentially, I will summarize a few key limitations and discuss how the conceptual tools developed in the social

movements literature can help further advance our understanding of this phenomenon.

2.1. Diffusion Research in Organization Studies

The diffusion perspective has proved very influential in many disciplines of the social sciences, such as rural sociology, education, public health and medical sociology, communication, marketing and management, and geography (Rogers, 1995). This stream of research was initiated by studying the spread of technological innovations (Rogers, 1995). Organizational scholars later built on this tradition and employed diffusion models to study the spread of management practices across organizations. Studies in management using the term *diffusion* often adopt a sociological perspective, and try to understand the process and factors of imitation or reproduction of similar features in a larger population of organizations, which are not necessarily linked by any sort of exchange relationships. Researchers have primarily tried to specify the *structural mechanisms* of diffusion (Strang & Soule, 1998; Wejnert, 2002). *Relational* and *non-relational* models represent two large theoretical streams which can be distinguished in this very large corpus of research (McAdam & Rucht, 1993).

Studies using a *relational* model have examined the interpersonal or interorganizational networks supporting the diffusion of an innovation, and have theorized how various types of interpersonal ties may promote or hinder diffusion. This line of theoretical argument was initiated by Coleman, Katz and

Mendel (1957), who studied the diffusion of a new drug among doctors in four U.S. cities, and found three successive stages in the diffusion: the innovation spread first through professional networks, then through personal friendship networks; finally, late adopters were influenced not by direct ties in their social network, but by indirect influences such as ads in the media. Thus, the authors found that the social network of doctors was an important factor explaining diffusion in the early phases of spread. This seminal study is widely considered to have pioneered social network analysis techniques as well as diffusion studies.

Yet a core argument advanced by Coleman and colleagues was later disputed and amended. Reanalyzing Coleman's dataset, Burt (1987) argued that the mechanism underlying diffusion of the new drug was not *cohesion* (i.e., direct influence of other members through conversations or other contact) but rather *structural equivalence* (i.e., the perception that adoption is proper because other members with similar positions in the social structure are adopting). Strang and Tuma (1993) later refined the argument by using models that could take into account temporal and spatial *heterogeneity*, thus allowing to assess the impact of adoption by centrally positioned individuals, or of delays in adoption, on the subsequent adoption patterns. The heterogeneous diffusion model proposed by Strang and Tuma (1993) nuanced Burt's argument by showing that cohesion did contribute to the diffusion process. Furthermore, it showed that structural equivalence operated not only through formal professional attributes, but also through patterns of personal characteristics and orientations. While the question of cohesion versus structural equivalence has generated much research and

controversy in the diffusion literature (e.g., Davis, 1991), it is important to note here that the structural equivalence argument draws attention to new constructs that are unrelated to interpersonal ties, such as the idea of what "being a professional doctor" means, and the role of status in adoption.

Other lines of theoretical argument have been advanced that explain diffusion primarily through *non-relational* models. An important theoretical development departing from the initial interpersonal focus has been led by neo-institutional theorists, who have explored the *cultural bases* of diffusion (Strang & Meyer, 1993; Strang & Soule, 1998).

Institutional arguments were first introduced in diffusion theory by the seminal study of diffusion of service reform in American cities by Tolbert and Zucker (1983). Their study contributed to a larger debate in organizational theory about the sources of organizational structure. On the one hand, the rational actor perspective, building on Thompson (1967), viewed organizational practices and structures as endogenously and rationally determined by management, and in need of protection from direct environmental constraints (Thompson & Mcewen, 1958). On the other hand, the emerging institutional perspective (DiMaggio & Powell, 1983; Meyer & Rowan, 1977), emphasized the influence of the institutional environment on organizations, and viewed organizational practices and structures as ceremonially adopted to conform to widespread, socially constructed norms of efficiency. Tolbert and Zucker (1983) reconciled both approaches by hypothesizing a "rational to ceremonial shift"

during diffusion. They found that the decision to adopt the reform in the early time periods was linked to objective characteristics of the early adopters, thus could be explained by rational factors. However, as the process of adoption continued, the characteristics of cities were less frequently significant predictors of adoption. Tolbert and Zucker concluded that the later adopters were motivated not by rational, but by mimetic reasons: in other words, they adopted the Reform because a significant number of other cities had already done so; the Reform had become legitimated, and adopting it had become a way to gain legitimacy and appear to conform to the new, socially constructed norms of efficiency and rationality.

The neo-institutional argument was later refined by Westpahl, Gulati and Shortell (1997), who studied the spread of Total Quality Management (TQM) programs in hospitals and found that institutional factors influenced not only the adoption, but also the amount of customization of the diffusing practice: while early adopters were adapting the practice to their needs, late adopters conformed to a standardized and legitimized form of TQM. Their argument was that earlier adopters were more prone to customize the practice because they adopted for purely rational reasons; on the other hand, later adopters tended to conform to existing forms of TQM because the practice was, by then, institutionalized, and they were mainly adopting as a means to gain legitimacy.

The core idea of a shift in underlying causal mechanism during diffusion has been disputed by later studies. In their study of the early processes of institutionalization, Ritti and Silver (1986) proposed that a new structure may

emerge not for technical or purely rational reasons, as Tolbert and Zucker have argued, but for institutional reasons, to solve a legitimacy issue. Studying the emergence of a new public agency, they concluded that new structures can appear not as a technical solution to a technical problem, but as an institutional solution to a political problem. Thus, Ritti and Silver (1986) emphasized the social construction of problems, even in early phases of diffusion, which contradicts the rational initiation of diffusion as theorized by Tolbert and Zucker (1983). Greenwood, Suddaby and Hinings (2002) developed a related argument in their study of how the stated mission of the Big Five firms evolved from pure accounting to a larger mission including management services. They found that the new practice had to be legitimized through *theorization*, i.e., discursive alignment of the practice with prevailing values and assumptions (Strang & Meyer, 1993). They argued that in highly normative settings such as the professions, news ideas are not legitimized through diffusion, but *before* diffusion, through active theorization. The theoretical model of diffusion based on rhetoric advanced by Green (2004) similarly highlighted how legitimacy is constructed rhetorically through the skillful use of language to promote adoption of new practices.

Other subsequent studies have disputed the assumption that innovations are adopted for increasingly ceremonial or mimetic reasons as diffusion proceeds. In his study of how TQM was adopted in five different organizational settings, Zbaracki (1998) concluded that the diffusion of TQM was contradicting classic institutional diffusion predictions on three counts, because: (a) TQM

remained viewed as a technically superior technique, as opposed to simply more legitimate; (b) its definitions grew increasingly broad, with increasing variation and vagueness, as opposed to increasing conformity and specificity, as Westphal and colleagues (1997) would have predicted; and (c) basic personal, social psychological forces were found to fuel the diffusion process, not macro-cultural forces.

Finally, Strang and Macy (2001) lamented the fact that in most diffusion research, "ideas about rationality and effectiveness come to be cast in opposition to ideas about imitation" (p148). They argued that "rationality and contagion are key components of diffusion analyses, but when applied independently as abstract principles, their behavioral assumptions are often implausible and their empirical implications restrictive" (p153). Strang and Macy advanced the argument that rationality and contagion do not operate separately in different phases, as initially hypothesized by Tolbert and Zucker (1983), but rather simultaneously. They used computational experiments to test a model of "adaptive emulation," which astutely integrated rational anticipation of results with close monitoring of competitors, thus eliminating the need to theorize a hypothetical "shift" in causal mechanism during diffusion.

In spite of the theoretical debates outlined above and of the multiple theoretical models still coexisting within it, the neo-institutional perspective has become dominant in diffusion research (Sturdy, 2004).

Inspired by game theory, *threshold models of diffusion* represent another important line of theoretical development that departs from the initial emphasis on relational channels to explain diffusion (Granovetter, 1978; Schelling, 1978). But instead of using collective constructs such as norms or legitimacy to explain individual behavior, threshold models emphasize the distribution of individual motives in a population to explain macro-level outcomes. Such models help explain how sub-optimal innovations can diffuse in a population.

MacAdam and Rucht (1993) first questioned the previously outlined dichotomy between relational and non-relational factors, arguing that ideas and practices are likely to spread though a mix of both types of factors. Similarly, Wejnert (2002) proposed an integrative model of innovation diffusion that mixes relational and non-relational factors: while large collective actors such as nations, states or social movements adopt mainly through non-relational channels of communication, smaller collective actors (organizations) adopt through both relational and non-relational channels, and either weak ties of professional relations or strong ties of highly integrated partners; finally, individual actors adopt mainly through strong ties.

Management Fads and Fashions

Within the "diffusion" tradition outlined above, researchers have examined the phenomenon of management *fads and fashions:* management ideas or practices that gain quick (and ephemeral) celebrity and diffusion. This line of inquiry, centered on a specific empirical phenomenon, now constitutes an active

area of study (Clark, 2004). Equipped with the theoretical and methodological tools of the diffusion perspective, recent scholarship on management fads and fashions has considerably advanced our understanding of how management concepts spread in organizations. In this research agenda, one framework has become prevalent, which conceptualizes a "market of management ideas," governed by economic dynamics of supply and demand (Abrahamson & Fairchild, 1999; David & Strang, 2006). A call for attention to the 'brokers' of managerial innovations was first made by Kimberly (1980); but this line of research was largely spearheaded by the work of Abrahamson and colleagues (Abrahamson, 1991, 1996; Abrahamson & Fairchild, 1999), who focused on the trend-setting communities such as business gurus, consultants, and management scholars. Subsequent work in this line studied the rhetorical techniques of management gurus and consultants, and equated the art of consultancy with the art of impression management (Clark, 1995). This research agenda on the providers or 'brokers' of management knowledge has greatly improved our understanding of the spread of management ideas and concepts, and still opens fruitful avenues for future research. However, this line of inquiry has been recently criticized for overemphasizing the role of the fashion setters, and reducing the role of managers to simple consumers of a finished product. As Morris and Lancaster (2005: 207) put it, "at the extreme, recipients of ideas can be portrayed as dupes of influential carriers, such as gurus, consulting firms and business schools." Another limitation of the supply-and-demand perspective is that it artificially separates fashion generation from fashion diffusion (Clark,

2004). Most studies focusing on the "supply side" have been concerned with the legitimation strategies used by consultants and gurus, and with their activities to disseminate ideas that were already formed. However, the actual construction or emergence of management ideas and concepts has received little attention so far (Zilber 2006).

From Diffusion to Translation

The diffusion model was first questioned by researchers in the sociology of science. In a series of influential studies, sociologists Callon and Latour (Callon, 1986; Latour, 1987) studied scientific controversies, and traced how new scientific theories spread and are adopted by the population of scientists. Building on the philosophical work of Michel Serres, they proposed to replace the term *diffusion* with *translation*, because of its richness in meaning (Callon, 1986; Latour, 1986). The term translation, imported from linguistics, has the capacity to evoke both a movement or displacement and the necessity of transformation (Czarniawska-Joerges & Joerges, 1996). In fact, the transfer of an innovation is not unlike the translation of a word into a foreign language: as the concept is transferred from one realm to another, it necessarily undergoes some amount of transformation. Furthermore, this perspective rehabilitates the agency of actors who choose to adopt this concept and adapt it to their own needs (Latour, 1986).

The original program of the sociology of translation was to study the evolution of sociotechnical objects or scientific theories as they spread through

society. Czarniawska and Sevon (1996) later imported the concept of translation to organizational studies and sparked a growing research interest around the translation of management ideas and concepts (Frenkel, 2005; Morris & Lancaster, 2006; Zilber, 2006). Whereas most previous diffusion studies focused on the adoption versus non-adoption of practices, this emerging agenda explicitly examines the role of institutional and contextual influences that contribute to the transformations and translation of management ideas as they travel from one institutional and cultural context to another. Indeed, the translation perspective is particularly well suited and has been often used to study cross-national diffusion of managerial practices (e.g. Djelic, 1998; Sahlin-Andersson, 1996).

Researchers in this tradition are drawing attention to the many micro-level activities that enable the spread of practices: actors interpret, adapt, manipulate management practices, and it is only through this complex work that management practices travel (Reay, Golden-Biddle, & Germann, 2006). Thus, the translation perspective is well equipped to describe the subtle evolution undergone by practices as they flow in organizational fields. Second, the translation paradigm views the network sustaining the spread not as a given, but as an object of study. The creation and spread of the network of actors supporting the spread of the practice becomes the focus of research: how alliances are built, which actors become supporters and why, are typical questions driving the investigation. But by focusing on adaptation, this research approach is poorly equipped to explain stable features, and often cannot explain

the striking dynamics of homogenization that were first emphasized by neoinstitutional theorists (DiMaggio & Powell, 1983).

Umbrella Constructs

More recently, researchers have started to investigate the diffusion of the most abstract elements composing a managerial practice, such as keywords or "umbrella constructs" (Hirsch & Levin, 1999), large ideational repositories of meaning that are linked to diverse practices and symbols. Early precedents include the discussion on interpretations of the concept of *market society* by Hirschman (1982). More recent work has examined more systematically the evolution in vocabularies of *corporate governance* (Ocasio & Joseph, 2005), the concept of *globalization* (Fiss & Hirsch, 2005), the concept of *quality* (Dobosz-Bourne & Kostera, 2007; Giroux & Taylor, 2002), *safety* (Gherardi & Nicolini, 2000), *empowerment* (Bartunek & Spreitzer, 2006), *business model* (Ghaziani & Ventresca, 2005), and *organizational effectiveness* (Hirsch & Levin, 1999). Scholars have generally argued that the initial vagueness and inclusiveness of umbrella constructs play to their advantage; these characteristics bring "strategic ambiguity" (Giroux, 2006) to a construct and allow diverse interpretations to coexist under a common conceptual roof. Further, researchers have shown that umbrella concepts go through cycles of evolution: they evolve from initially broad formulations to increasingly refined definitions (Hirsch and Levin 1999), through the influence of challenges to their validity and distinctiveness. Such cycles eventually lead to stable acceptance in the field, to perpetual challenge, or

to dismissal (Hirsch and Levin 1999). Work in this area is still emerging, and suffers from one common limitation: by focusing mostly on macro-level dynamics of spread, such studies neglect the micro-level, interpretive work deployed by the people who are behind those concepts, promoting, defending or attacking them.

Management Paradigms

A limited number of researchers have attempted to capture the spread of full-fledged management paradigms, by looking at the large collection of concepts, techniques, and tools that add up to form a coherent managerial model. Barley and Kunda (1992) were among the first to opt for a long-term perspective, in order to surface large paradigmatic shifts in the ideologies underlying managerial action in US corporations during the 20th century. They posited the existence of two opposite ideational poles, and the periodical alternation between a rational and a normative ideology in managerial practices. Guillen (1994) studied the spread of three major management paradigms (Scientific Management, Human Relations, and Structural Analysis) in the US, Spain, Germany and the UK. Guillen found that organizations in different countries may adopt either an ideology but not techniques (e.g., Human Relations in Spain) or some techniques but no ideology (e.g. Scientific Management in the US and Germany before WWI) or both techniques and ideologies (e.g. Human Relations in the UK). Guillen thus uncovered and

emphasized the loose link existing between the technical embodiment of management paradigms and their ideological grounding.

Another important work on the diffusion of management paradigms is Westney's study of how western models of organization for the police, the post and the newspapers were imported to Meiji Japan. In her discussion of research findings, Westney (1987) emphasizes the role of active interpretation necessary to implement any organizational model. She argues that "part of this process [of organizational model importation] involved the redefinition of "tradition" and what "Japanese" patterns really were, an ideological challenge that absorbed much of the energies of Japanese intellectuals and government leaders in the late Meiji period" (p24). This finding refutes the idea of "fit" or "resonance" between the management model and the institutional context advanced by some institutional scholars (e.g., Kostova & Roth, 2002). In the cases studied by Westney, fit between the management model and the importing society was not intrinsic. Rather, fit resulted from an active redefinition of tradition: "the selective invocation of elements of the past, reinterpreted in the light of the needs of the present (particularly organizational needs for control), was an important part of the organizational development process in Meiji Japan, as it still is in Japan today" (Westney, 1987: 24). The detailed account provided by Westney of the interpretations underlying the importation of managerial models greatly expands our understanding of the phenomenon; but like most works in this area, it relies on archival data and cannot provide a sense of how such interpretive work unfolds in real time within organizations.

Opportunities for further contributions

As this review has shown, several research streams have investigated the phenomenon of spread of management concepts, from different angles. While each stream has tremendously expanded our understanding of this complex and pervasive phenomenon, taken together they leave several questions unanswered, and thus suggest a need for an integrative attempt which would ask new research questions.

First, as reviewed above, one thread common to most studies in the diffusion paradigm has been to ask the question, What are the mechanisms leading organizations to adopt a given practice? This attention given to similar and pervasive *features* has lead to an emphasis on the *structural mechanisms* of diffusion (Strang & Soule, 1998; Wejnert, 2002), and a concurrent de-emphasis on the nature of the "thing" that spreads and its transformations (Latour, 1986). While diffusion scholars have illuminated the complex interplay of relational and non-relational factors explaining the diffusion of organizational practices, they have tended to neglect the role played by local adaptations to the diffusing item, which both fuels diffusion and explains large-scale evolution (Campbell, 2005). Thus, while the accumulated knowledge on the determinants of adoption has greatly advanced our understanding of how practices spread, it is nevertheless worth noting that asking the question in those terms detracts from other questions, such as: What diffuses? And: How do practices evolve while they diffuse? The fact that those questions are rarely asked in diffusion research

arguably derives from the very concept of diffusion, which implies stability in the "thing" that is being diffused. Consequently, it de-emphasizes any potential evolution or transformation undergone by the item, or the evolution in the use of this item, during its diffusion.

As noted by Sturdy (2004), this critique of the diffusion model is only partially correct: researchers in the classical diffusion paradigm have progressively introduced the concept of *reinvention* to describe the idiosyncratic use of a given innovation done by individual adopters. Similarly, few studies (e.g., Westphal et al 1997) have examined the amount of *customization* of diffusing practices. Yet the customization described by Westphal and colleagues (1997) appears as a simple byproduct of diffusion. In other words, the role of reinvention in the diffusion paradigm has been viewed at most as accidental rather than as constitutive of the phenomenon of spread (Latour, 1986). However, other authors have described how management practices can be strategically adapted and shaped by actors to further their own agenda, resulting in a changed equilibrium of local power (Latour, 1986; Lozeau, Langley, & Denis, 2002). Diffusion researchers should expand on the specific role of practice variation first discussed by Westphal and colleagues (1997). Recent studies in the institutional tradition have shown that such variation, far for being an "accident" of diffusion, may be constitutive of the underlying micro-processes of diffusion (Lounsbury, 2001, 2007). Recent theoretical work has started to hypothesize a number of ways practices may vary through diffusion (Ansari, Fiss, & Zajac, 2010). Still much theoretical and empirical work remains to be

done to explain in more details the process through which practice variation happens.

Second, diffusion scholars need to abandon previous assumptions of linearity or unidirectionality in diffusion, and elaborate models that integrate the potential for more messy, non-linear processes (Ferlie, Fitzgerald, Wood, & Hawkins, 2005). Diffusion may proceed by surges, fluctuations, in an indeterminate way. Recent studies of management fashions and other transient collective beliefs (Abrahamson, 1996; Abrahamson & Fairchild, 1999; David & Strang, 2006) have developed useful models that do not take for granted the unidirectionality of diffusion. For example, in their study of the boom and bust of TQM consulting, David and Strang (2006) show how the TQM fashion went through three successive phases: from technical roots to increasingly generalist formulations during the boom; and finally back to more technical and specialized forms after the bust. They thus extend the original "rational to ceremonial" argument, and propose a "rational to ceremonial to rational" sequence of change. A closely related argument can found in Zilber (2006), who, in her study of the Israeli high-tech industry, shows how "high-tech rational myths moved from being technical or informative to being more symbolically loaded, and then, once economic success had dwindled, back to the more informative" (p284). Those moves followed the material movements of high tech from boom to bust. Both David and Strang (2006) and Zilber (2006) direct attention toward (a) the various forms taken by diffusing practices and their legitimating accounts, and (b) the evolution of those forms as diffusion proceeds.

Third, diffusion scholars should strive to integrate arguments of rationality and contagion, rather than try to separate them temporally or analytically (Strang & Macy, 2001). This will require an exploration of the *interpretive, micro-level processes of diffusion*: while many diffusion studies rely on interpersonal influence and contagion, we often don't know what individuals exposed to a new practice concretely see (Strang & Soule, 1998). Most notably, a perspective centered on the production of rationality through discourse and rhetoric (Green, 2004; Phillips, Lawrence, & Hardy, 2004) seems to hold great potential to "open the blackbox of diffusion" and describe "the practical, creative work necessary to make diffusion happen" (Lawrence & Suddaby, 2006: 247), without relying on an artificial dichotomy between rationality and contagion. As Munir & Phillips (2005: 1669) argue, "in modern societies, the production of institutions is largely a textual affair." Thus, scholars should explore more explicitly the symbolic dimensions of diffusing practices, to understand the process through which a diffusing practice or innovation gradually becomes "*infused with value* beyond the technical requirements of the task at hand" (Selznick, 1957: 17) through its sheer salience, and how this impacts the diffusion process. Zilber (2006) noted that most studies in the institutional tradition have explored the structural rather than the symbolic or ideational dimensions of institutionalization. Yet "structures and practices may have the same labels and look the same, whereas a deeper look may uncover subtle differences in their enactment and in the meanings different groups attach to

them" (p300). Weick (1995) makes a similar point when he argues that "Researchers need to be especially mindful that they not simply assume that people internalize and adopt whatever is handed to them, an assumption that tends to be invoked more often, the higher the level of analysis. Institutional theorists sometimes assume that ideologies ("institutional systems") are more singular, homogeneous, and compelling for larger sets of people, than close inquiry shows to be the case" (p112-113). Future research is needed to understand the micro-level, interpretive work that sustains the diffusion of organizational practices and concepts (Reay et al., 2006).

A related limitation of previous diffusion studies is that little attention has been paid to antecedent issues and practices on which a diffusing management concept builds. Diffusing practices are often the object of contestation and negotiation (Campbell, 2005; Lawrence & Suddaby, 2006). New management concepts do not arrive on a tabula rasa; as Weick (2004) aptly described, an important characteristic of any management initiative is the need to integrate pre-existing issues, concerns, practices, and problems. According to Weick, this is why managing can be closely compared to designing: managers just like designers rarely start with a blank page; rather, they are *thrown* into a situation and need to integrate previous issues within the design of novel arrangements. The implication of this perspective for the study of diffusion of new management ideas is important: the process through which preexisting issues and solutions are repackaged in a novel way by new management concepts deserves closer examination. Institutional theorists have already

emphasized that new institutions are often built *with* (not *on*) the ruins of previous institutions. In other words, new institutional arrangements are never woven out of whole cloth, but integrate pre-existing elements in a novel way. Diffusion theories need to specify how diffusing concepts subsume related, existing issues as a mechanism of growth.

Finally, researchers studying the large-scale diffusion of abstract concepts or keywords have rarely examined how shifting constellations of actors or issues may impact the diffusion trajectory or the amount of concept variation. As a result, important questions remain unanswered: what drives the evolution in meaning? Are there any specific actors who contribute to this evolution? What agenda are they pursuing? While previous studies have tended to portray evolution in meaning as a self-driven, almost natural phenomenon, it is likely that such evolution is the result of ongoing battles and contests over interpretation. In other words, studies tracing the evolution of meaning need to pay attention to the role of agency and stakeholder interests in forging meaning and interpretation. A description of an evolution in meaning only makes sense when coupled with a description of those contests, and of the stakes perceived by the actors engaged in those contests.

A number of studies have drawn attention to the complex ideological linkages of societal trends with organizational models (Barley & Kunda, 1992; Guillen, 1994; Guillen, 1997; Haveman & Rao, 1997; Rao, 1998). Not paying attention to the ideational undercurrents linked to or transmitted by specific organizational concepts leads to viewing organizations as isolated and

disconnected from their larger cultural environment. This represents an additional limitation of existing theories of diffusion: new management concepts have often been depicted as if they were isolated from other tendencies, trends, preoccupations or movements in the larger society. It is important to better understand how larger social movements in society may impact the diffusion of new management concepts in organizations.

2.2. How Social Movements Theory Can Contribute

Students of social movements in sociology have long examined how new ideologies spread through society via organized contentious action, and thus their theoretical models present great potential to expand scholarship in organization theory on the spread of managerial models and practices (Campbell, 2005; Rao et al., 2000). Social movement scholars began focusing on interpretive dynamics earlier than their colleagues studying diffusion in organizations. Back in 1986, Snow and colleagues (Snow, Worden, Rochford, & Benford, 1986: 465) noted a striking shortcoming in "the tendency to gloss questions concerning the interpretation of events and experiences relevant to participation in social movement activities and campaigns". They also criticized the social psychological perspective taken by a few scholars who had looked at the process by which social movement participants weigh anticipated cost and benefits of action, thus reducing a complex process to a mechanical, "rational calculus perspective" (p466). The same critique could be directed to contemporary studies of diffusion in organizational studies. The lack of attention to the interpretive

processes sustaining diffusion has been pointed out by several authors (e.g. Zilber 2006; Strang & Soule 1998), as noted above. Diffusion scholars have tended to pay more attention to structural factors than to interpretive dynamics, arguably because most diffusion studies were pursued using a macro perspective and quantitative research methods. Whenever the interpretation of issues has been considered, it was portrayed in terms of "threat versus opportunity" linked to adoption of a given practice (Kennedy & Fiss, 2009; Tolbert & Zucker, 1983) in a manner reminiscent of the "rational calculus perspective" criticized by Snow and colleagues (Snow et al., 1986). But the process through which an issue becomes constructed as being more or less threatening has received too little attention.

Students of social movements have developed the concept of *framing*, defined as "an active, process-derived phenomenon that implies agency and contention at the level of reality construction" (Snow & Benford, 1992: 136). Social movement actors as well as other specific actors (such as the media or potential countermovement actors) engage actively in this process of interpretation of reality. Emerging from this constant interpretive activity are *collective action frames*, "action-oriented sets of beliefs and meanings that inspire and legitimate the activities and campaigns of a social movement organization" (Benford & Snow, 2000: 614). An important characteristic of frames is that they are negotiated collectively, resulting from meaning contests that can happen both within a movement (Benford, 1993) or with external audiences such as the media (Gitlin, 1980). Students of framing in social

movements have discussed how collective action frames may evolve over time through various mechanisms (Benford & Snow, 2000; Gerhards & Rucht, 1992). For example, Snow and colleagues (1986) focused on the deliberate strategies pursued by social movement organizations – and in particular, by their leaders – to increase the reach of their discourse and to improve the resonance of their collective goals with existing individual preoccupations. This process which they labelled *frame alignment* refers to "the linkage of individual and social movement organizations' interpretive orientations, such that some set of individual interests, values and beliefs and SMO activities, goals, and ideology are congruent and complementary" (p464). Snow et al. describe four processes of alignment: frame bridging, frame extension, frame amplification, and frame transformation. Their typology usefully captures the evolution of individual frames, which are assumed to be coherent and well defined.

Researchers have also examined how culture and strategy are intertwined in frames articulated by social movement activists. For example, in his integrative volume on social movements and contentious politics, (Tarrow, 1998: 109) describes the global spread of Marxism, and how its framing evolved from a "theory of mass working-class revolution to one of elite-led organization and mobilization" as it landed in Lenin's Russia, and later to a "struggle of colonial people based in the countryside of the world against the parasitic cities" in the doctrine developed by Mao in China. In both cases, the framing resulted from a subtle blending of pre-existing cultural elements with new elements imported and articulated by creative leaders. As Tarrow concludes, "changes in the

symbolism of a movement are neither derived directly from culture nor woven out of the whole cloth of ideology, but are the result of its strategic interaction in its various and changing settings" (p109). Social movement researchers have called for further work on the concept of framing. More empirically grounded work is called for by Benford and Snow (2000) to elucidate how frames are generated or constructed through interactive negotiation between various audiences.

Importing the concepts of frames from social movements into organizational theory can contribute to the research agenda called for by social movement researchers. In recent years, a body of work has started to build connections between social movement and organizational theory (e.g., Davis, McAdam, Scott, & Zald, 2005; Rao, Monin, & Durand, 2003; Rao et al., 2000; Schneiberg & Lounsbury, 2008). Drawing on social movements theory presents considerable potential to enhance current theories of institutional change (Campbell, 2005). Notably, the framing perspective present great potential to examine the *interpretive processes* underlying the diffusion of management concepts as well as *the dynamics through which management concepts evolve as they diffuse*, two persisting limitations of the literature noted above.

2.3. Synthesis of Objectives and Research Questions

The theoretical objective of the study is to increase understanding of the nature and the dynamic of diffusion of management concepts. Specifically, the study addresses the following analytic research questions:

(a) What interpretive mechanisms underpin the diffusion of management concepts?

(b) How does the framing of management concepts evolve as they diffuse?

Answering those questions will require addressing some related sub-questions, such as: How do management concepts coalesce within an organizational field? Through what mechanisms do distinct issues and practices get subsumed under a unifying management concept?

2.4. Empirical Setting for the Research

Empirical object of study: Environmental management concepts

Corporate environmental initiatives represent a promising venue for examination of these questions, for several reasons. Corporate conceptions of environmental issues are arguably evolving in profound ways. Not only have entire industries become increasingly sensitive to the strategic importance of environmental issues (Hoffman, 2001a); new integrative concepts such as *sustainability*, *design for the environment*, *environmental management systems* or *corporate social responsibility* are now emerging that recast existing corporate activities into a novel framework. In particular, *sustainability* has become a "semantic magnet": a term that remains vague and subject to multiple interpretations, and that seems to attract attention from very diverse actors and perspectives. Just like other "umbrella concepts" (Hirsch and Levin 1999), it is

vague if it remains at an abstract level. Furthermore, some firms clearly use their environmental programs as a marketing or public relations tool, while others arguably engage in a very deep questioning and reevaluation of their activities and impact. Environmental management concepts are likely to generate interpretive contests, partially because they are the object of attention by multiple audiences. Finally, environmental issues have become a topic of increasing concern. Organizations are presently trying to figure out what environmental sustainability means to them, thus offering a unique opportunity to observe interpretive processes in real time.

Researchers have discussed how the concept of sustainable development emerged during the 1980s as "a promise of reconciliation" between economic development and preservation of the environment, two imperatives that were cast as irreconcilable during the 1970s (Robinson, 2004; Zaccai, 2002). Several authors have argued that the vague notion of sustainability had the merit of serving as a meeting point or crossroads between various currents investigating alternatives to unbridled economic development (Mebratu, 1998; Robinson, 2004; Zaccai, 2002), thereby confirming the "strategic ambiguity" argument put forth by communication theorists (Giroux, 2006). But this realization leaves important questions unasked: while it is clear that multiple definitions of the concept of sustainability exist, we don't know whether this coexistence is pacific or contentious: in other words, are the various definitions in direct competition, or are they pacifically coexisting?

Such questions are important for the concept of sustainability, mainly because of characteristics that differentiate this concept from previous management paradigms. Most previously studied management concepts were initiated and promoted from within the corporate world: for example, the doctrine of Human Relations was defined and developed by business school professors; Scientific Management was formulated by engineers in corporations. But the concept of sustainability emanated from outside the corporate world, and is largely promoted by diverse actors who until recently were not associated with corporations, such as environmental groups and activists, and NGOs. One premise of this research is that novel environmental management concepts are an important case for study, because they epitomize a novel form of diffusion, one which involves a very large spectrum of actors with partially contradictory goals and objectives. It is in this sense that the contemporary trend toward environmental protection in organizations has more the characteristics of a social movement than most previously studied management concepts.

Empirical setting: the civil aviation industry

Given this set of initial questions guiding the inquiry, I developed a list of criteria to help me identify and select a suitable empirical context for the investigation. I decided to study in-depth a single case of diffusion of a management concept within one carefully chosen setting. First, I wanted an industry facing external scrutiny or contestation. Second, since I wanted to observe legitimacy dynamics in real time, I wanted an industry in which the

debate was still ongoing. Third, I wanted an industry which had no easy answer to the issues of sustainability. Fourth, I preferred a regulated environment as opposed to a loosely regulated one, because firms operating in highly regulated environments are subject to greater legitimacy pressures (Kennedy & Fiss, 2009; Scott & Meyer, 1983). Finally, I needed to select an industry for which extensive data was available.

Based on these criteria, several industry settings were considered, including mining, consumer electronics, and oil and gas industries. The commercial airline industry stood out as an attractive empirical setting to examine this process of evolution for several reasons. First, although the mining and oil industries offered a rich history of controversy and social contestation, neither seemed to have experienced such a radical shift in public image as aviation, which has evolved from a praised symbol of globalization to a targeted icon of climate change offender in a surprisingly short time. Aviation is receiving growing scrutiny and critics by environmentalists and other observers, mainly for its contribution to climate change emissions. Its precise environmental footprint is heavily contested. While industry representatives cast air transport as a modest contributor to climate change with 2% of global carbon emissions, some environmentalists argue that other calculations may lead to four or five times this figure; and they point to the forecasted increase in air traffic as the fastest growing source of carbon emissions. The scientific community is still debating to assess the overall contribution of air travel to global warming. While the warming impact of other modes of transport is well known, there is still

much uncertainty about the net impact on climate of aircraft emissions released at high altitudes. This persisting uncertainty explains the widely diverging assessment of environmental impact invoked by different actors. Such contestation around the environmental footprint of the industry makes it an interesting terrain to observe processes of meaning formation and interpretative contests.

Second, the commercial aviation industry is a key economic actor today, and it will probably grow in importance in future years. The field of civil aviation has played an important role in the recent transformation of our societies. As Urry put it, "without the rapid development of the complex extended systems of mass air travel, what is now termed 'globalization' would be utterly different, possibly non-existent" (Urry, 2007: 149). Global airline passenger traffic is expected to continue to grow at an average annual rate of 4.6% until 2025, while cargo air freight is expected to grow at 6.6% annually over the same period (ICAO press release, 18 September 2007). Thus, the debate on the environmental impact of aviation is not likely to fade away in future years, but rather to become increasingly relevant for this industry.

Finally, airlines have been going through a series of great disruptions in the last few years (9/11, rising oil prices, global warming and environmental issues) which threaten the status-quo and force them to innovate and change. These characteristics are likely to generate variation in the way air transport sustainability is conceptualized and implemented in different organizations.

Practical justification for the research

Studying how the aviation industry is conceptualizing and acting on environmental issues also has practical importance. Many environmentalists see this industry as intrinsically unsustainable: it consumes a non-renewable fossil energy (SustainableDevelopmentCommission, 2008). Can such an industry ever embrace "sustainability" in a meaningful way, without emptying the concept of its substance? The tools and concepts recently developed by social movement theorists present great potential to address this question, thereby fulfilling what some authors have called "Organizational Theory's neglected mandate": to explore the impact of organizational processes on the larger social system (Stern & Barley, 1996).

Chapter 3. METHODS

3.1. Research Strategy

One premise of this research is that managerial concepts are not uniform and homogeneous, but rather composed of a collection of meanings that never really unify, and remain in constant contestation and partial overlap. This perspective doesn't view the meaning of concepts or practices as stable; rather, it focuses on the dynamic activity of framing and meaning attribution deployed by the various actors promoting the concept. Thus the study builds on recent developments in institutional theory that emphasize the contested nature of institutions, and the necessity to take into account the interactions between multiple, coexisting logics and meanings (Djelic, Nooteboom, & Whitley, 2005; Lawrence & Suddaby, 2006; Schneiberg & Clemens, 2006).

The research design aims at capturing two important characteristics of the phenomenon of interest: (a) the *multilevel* character of diffusion; (b) the *interpretive* processes of diffusion. Each characteristic requires a brief justification and explanation.

First, most research on diffusion has employed a macro perspective, using quantitative research methods. As Strang and Soule (1998) have argued, new research designs are called for to open new directions for diffusion research. While recent work on change in institutional environments has emphasized the need for multi-level analysis to understand complex processes of cultural

framing (Djelic et al., 2005; Zilber, 2006), still very few diffusion studies have adopted this perspective. There is a need to integrate how practices are theorized and framed by actors at the micro level with the more macro-level description of diffusion dynamics across communities or organizational fields.

The necessity of examining diffusion from multiple levels and perspectives is highlighted if we consider institutions as emerging from the settlement of political contests and conflicts among various stakeholders. This view of institutions as outcomes of cultural and political contention has been opposed to a view of institutions as "cooperation-for-collective-benefits" (Bartley, 2007). Viewing institutions as resulting from political contention justifies the need to consider not only the actors directly involved in the emergence of specific institutions (in this case, airlines), but also the largely diverse groups of actors and stakeholders that contribute to the cultural or political debate, including states, NGOs, suppliers and clients, as well as organized social movements that form around particular issues (Hoffman, 2001b). Figure 3.1 illustrates the perspective chosen for this study, in which various actors or stakeholders in aviation are seen as representing a distinct "slice of data" for this investigation. Focusing on field-level as opposed to organizational-level dynamics of diffusion and exploring underlying mechanisms has also been identified by scholars as an important endeavour to advance organizational theory (Davis & Marquis, 2005). This line of inquiry follows repeated calls for more attention being paid to the mechanisms unfolding at the

level of an institutional field (Campbell, 2005; Hoffman, 1999; Schneiberg & Clemens, 2006).

Figure 3.1: Combining Multiple Stakeholders' Perspectives on Environmental Management in Aviation (inspired by Hoffman 2001).

The second important goal of the research design was to capture the interpretive dynamics of diffusion. The overwhelming majority of diffusion studies so far have adopted a retrospective approach: they have sought to reconstruct a diffusion path (in most cases, a successful case) and analyze its underpinnings. However, almost no study to date has attempted to observe in situ the micro mechanisms of idea construction and evolution. Zilber (2006: 300) called for this type of fine-grained research: "especially rare in the research

literature are in vivo and in situ studies of editors or translators based on direct observation in real time rather than on case histories based on archival data and actors' reflections on their past actions." A real-time study of diffusion clearly limits the risks of recollection bias when using interviews. The present study aims at complementing the retrospective diffusion trajectory with an in-situ observation of interpretive mechanisms underlying concept diffusion.

The research strategy which I have adopted to capture interpretive dynamics is grounded theory. Grounded Theory (Charmaz, 2006; Glaser & Strauss, 1967) is a research approach that relies on the generation of theory through an iterative alternation between data collection, data analysis, and emerging theoretical development. In their original formulation, Glaser and Strauss (1967: 34) specified that "we use the word *grounded* here to underline the point that the formal theory we are talking about must be contrasted with 'grand' theory that is generated from logical assumptions and speculations about the 'oughts' of social life." In grounded theory, theoretical development progresses in parallel with data collection; indeed, the emergence of theoretical categories drives and orients further data collection efforts. Because of its reliance on locally created theoretical constructs that fit the qualitative data collected, the method is particularly suited to investigate interpretive processes (Charmaz, 2006; Suddaby, 2006).

Some authors have criticized grounded theory for its alleged incapacity to understand power, because of its predominant attention to local interpretive phenomena as opposed to "the broader macro forces that both limit change and

create domination in the micro sphere" (Burawoy 1991, cited in Charmaz 2006: 134). Charmaz (2006: 134) rejects this criticism by stating that "merely because earlier authors did not address power or macro forces does not mean that grounded theory methods cannot. It might mean pursuing mixed methods forms of data collection that include use of documents. […] Adopting grounded theory methods in [the areas of power and macro processes] could wring a new twist to old theoretical clothes." In this dissertation I follow Charmaz's recommendation to build grounded theory using a combination of data types and sources, including observational data, interview data, and archival data.

Taken together, the characteristics discussed above call for a research design that (a) uses data collected at various levels of analysis and in various spheres of discourse; (b) combines archival data allowing reconstruction of the sequence of events punctuating the diffusion trajectory, with qualitative data on the interpretive processes collected in real time.

3.2. Research Design

Qualitative and quantitative methods are complementary tools through which we organizational scholars develop understandings and theories of how organizations function. Qualitative methods provide rich, thick, and accurate understandings, whereas quantitative methods provide large sample and generalizable testing of these understandings. A number of scholars have pointed out that the norms and assumptions underlying these research traditions are profoundly different (Mahoney & Goertz, 2006). The vast majority of studies

take either a qualitative or a quantitative approach. However, a number of authors have pointed out that viewing qualitative and quantitative traditions in opposition to one another may actually be limiting our ability to advance organization theory (Bailyn, 1977; Evered & Louis, 1981; Jick, 1979).

First and foremost, the two research traditions can also be seen as highly complementary: developing methods by which to combine the groundedness and richness of qualitative research with the large sample characteristics of quantitative research will enhance our ability to create accurate, nuanced, and more highly generalizable theory (Evered & Louis, 1981). Second, neither qualitative nor quantitative methodology is as homogeneous as often assumed. This is particularly true of qualitative research, which includes a great diversity of approaches and paradigms (Charmaz, 2006; Van Maanen, 1979, 1988). For example, whereas Eisenhardt (1989: 546) is explicit that her approach "adopts a *positivist* view of research," Charmaz (2006) defends a *constructivist* approach to grounded theory that "places priority on the phenomena of study and sees both data and analysis as created from shared experiences and relationships with participants" (p130). Third, several exemplary research studies blur the assumed distinction between qualitative and quantitative research, thereby indicating that the two types of research are not intrinsically incompatible and that their combination holds great potential. For example, Mintzberg (2005) notes that his own research on managerial work (Mintzberg, 1973) and on strategy formation (Mintzberg & McHugh, 1985), classify, quantify and count evidence extensively, although many scholars label these studies as "qualitative" due to the manner in

which the data were collected. As Glaser and Strauss (1967: 18) forcefully argued, "the process of generating theory is independent of the kind of data used."

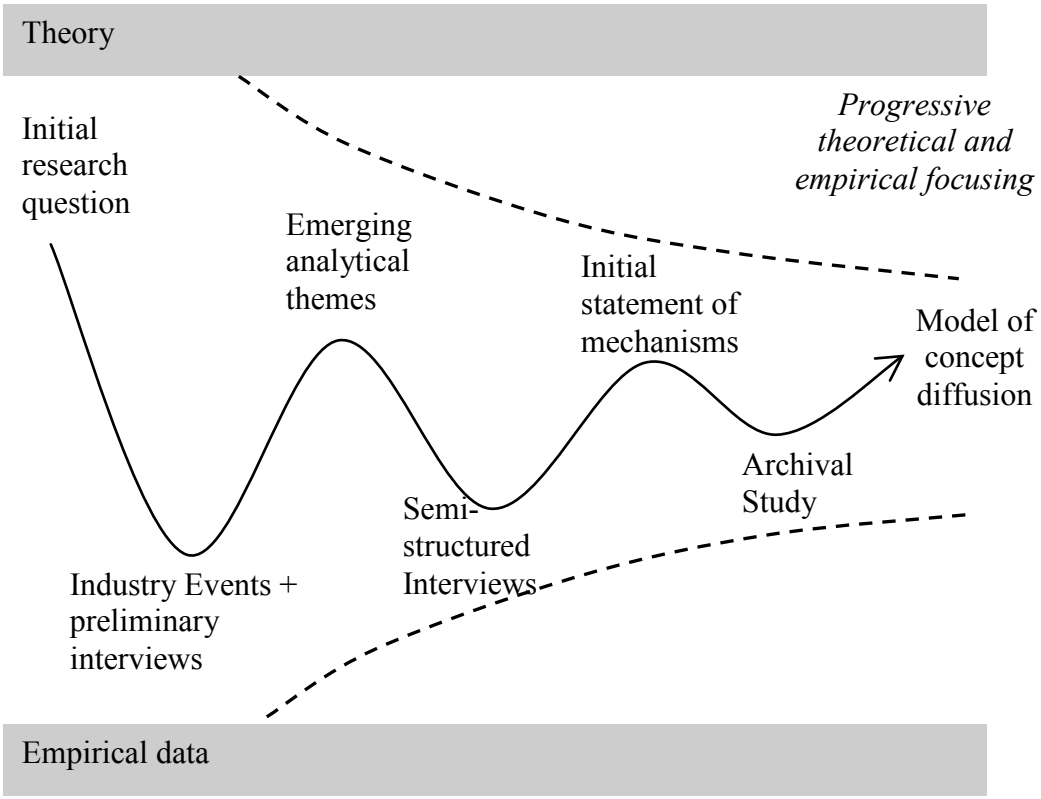
Thus, in contrast to researchers who view qualitative and quantitative research as two irreconcilable traditions, I subscribe to Van Maanen's (1979: 520) view that "qualitative methodology and quantitative methodology are not mutually exclusive." Several researchers have called for closer integration of research methods, underlining the potential benefits of using multiple lenses to capture a complex organizational phenomenon (Jick, 1979; Shah & Corley, 2006). Van Maanen and colleagues recommended incorporating more counting and classifying in qualitative data, and more context and description in quantitative datasets (Van Maanen, Sorensen, & Mitchell, 2007). More fundamentally, Evered and Louis (1981) recommend blending "inquiry from the inside" with "inquiry from the outside," through a continuous alternation between both modes. For Evered and Louis (1981: 394), the ultimate goal is the discovery of "a new kind of science that combines the rigor and standardization of positivistic science with the relevancy and groundedness of the alternative paradigms now in use."

One usual way to mix research methods follows an inductive-deductive sequence: qualitative research methods are used to generate theory which is subsequently tested through quantitative methods. While this ordering of the study phases is by no means the only possible one, it has been used previously by a number of researchers in organizational theory. For example, Uzzi (1996)

initiated his study of embeddedness by collecting ethnographic data in 23 New York apparel firms, then formulating propositions and testing them with a network dataset. Gioia and Thomas (1996) generated a theoretical model of issue interpretation and strategic change through an inductive case study of a university, and then tested the model using a survey instrument. Lounsbury (2001) started his study of the diffusion of recycling programs among universities with qualitative interviews and then tested his propositions using a survey instrument.

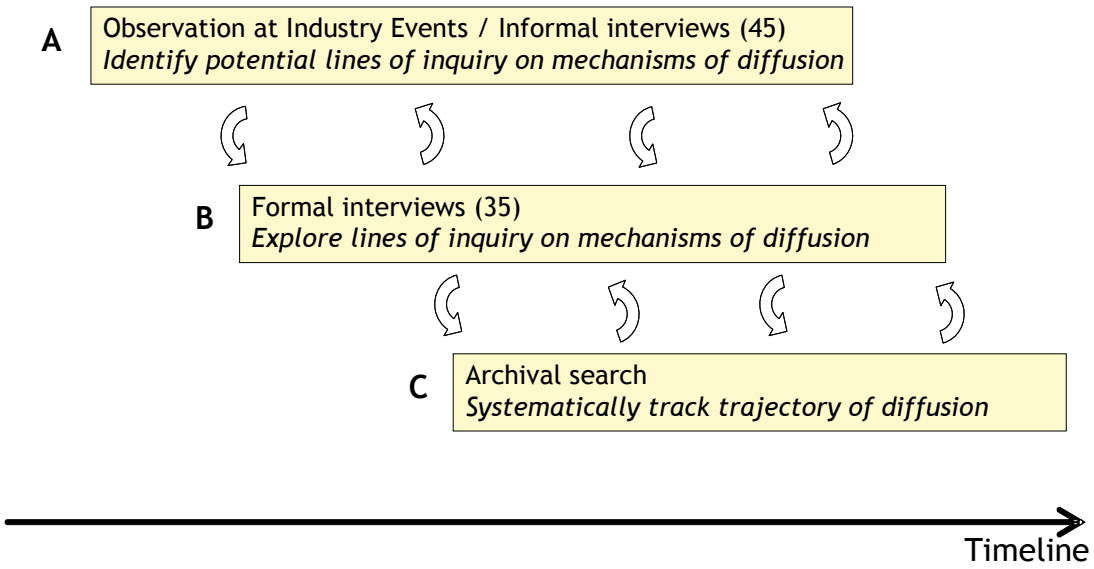
In this dissertation I did not follow the typical qualitative theory building – quantitative theory testing scheme adopted by several researchers. Because the goal of the investigation was primarily to build rather than test theory, various research methods were used in conjunction with one another. I approached my empirical setting from various angles, following a process of refinement. Figure 3.2 illustrates how the investigation progressed through back-and-forth iteration between theory development and empirical data collection.

Figure 3.2: Schematic Representation of the Process Followed in the Investigation



I opted for a research design that combined real-time data collected through observation at industry events (phase1), semi-structured interviews with a variety of stakeholders (phase 2), and archival data (phase3). The rationale for this choice of sequencing was to allow themes, questions or paradoxes to emerge during my initial phase of immersion in the field through observation at industry events. As shown on Figure 3.3, the three phases were not conceived as being distinct sequences arranged in strict order; they were partially overlapping and each phase of research informed the other two in an interactive way.

Figure 3.3: Research Timeline



Below I describe each of the three phases in more detail, in terms of data collection and data analysis.

3.3. Phase 1: Identifying Lines of Inquiry through Observation

The first phase of the research was an inductive study based on ethnographic observation at industry events. The goal of this exploratory study was to understand what concepts different actors in this industry use to talk about and organize their efforts around environmental issues, and to identify lines of inquiry that would be pursued more systematically through semi-

structured interviews and/or content analysis in the subsequent phases of the dissertation.

Ethnographic methods of inquiry rely on personal experience and description of cultures in situ (Van Maanen, 1988). Previous research has shown how industry events can be used to identify and surface industry-wide myths and belief systems. For example, Rosen (1985) used ethnographic observation at a breakfast organized by an organization at a local restaurant, to surface the assumptions and social orderings hidden behind the formal discourses and informal discussions. Such professional gatherings provide a lens to observe in condensed forms the manifestations of deeper institutional beliefs or logics. More recently, Zilber (2007) analyzed the discourse at a conference convened by the IT sector in Israel after the burst of the IT bubble, and contrasted the various stories developed by actors to make sense of the crisis. Thus, conferences or other similar industry events can be used as a microcosm in which industry beliefs and assumptions can be observed. Furthermore, such events are ideal sites to observe the framing deployed by various actors within an industry, when the specific objective of the event is to exchange on a topic of interest.

The events used in this study were four conferences organized by major players in the commercial airlines industry to discuss environmental issues. The first event was a Workshop on Sustainability and Ground Infrastructure. This 1-day event was attended by airport and air traffic control organizations from all over the world. The second event was a bi-annual Summit on Aviation and Environment. This 2-day event is an important gathering organized in

collaboration between the major Trade Associations in aviation (ATAG, IATA, ACI, CANSO). This was a very high level meeting, attended by CEOs and environmental managers of airlines, airports, air traffic control organizations, engine and aircraft manufacturers. A small number of governmental agencies and NGOs were also represented. This exceptional event constituted an ideal opportunity to observe in situ interpretive and framing processes in the industry. The third event was a 2-day conference organized by ICAO (the UN Agency for Civil Aviation) on Carbon Markets in Aviation. It gathered regulators, aviation industry people, and NGOs. The eventuality of including civil aviation into existing plans for industrial carbon markets is presently being discussed by several national governments and international bodies. Finally, I attended a Workshop on Aviation and Alternative Fuels. This was another one-time, 3-day event organized by ICAO. Again, it gathered regulators, aviation industry representatives, fuel companies, and some NGOs.

I approached each of those events in a similar fashion: I registered as a researcher, and introduced myself as such. I collected ethnographic data describing the setting, the types of interactions between participants, dress codes, etc. I recorded the keynote speeches and panel discussions, as well as the Q&A sessions. I obtained a copy of the powerpoint slides used by the presenters whenever they were available. During the coffee and lunch breaks, I systematically conducted informal interviews with as many people as I could. Those were not recorded, but I took handwritten notes, and at the end of each day I expanded my notes on the informal interviews and on my observations in

general. In total, over the four events, I conducted about 45 informal interviews. Subsequently I asked to conduct formal interviews with the participants that were the most informative. Getting their post-hoc perspective on the industry event proved to be an additional source of valuable data.

Ultimately the ethnographic data collected was analyzed using a grounded theory approach (Charmaz, 2006; Glaser & Strauss, 1967) as well as frame analysis (Creed, Langstraat, & Scully, 2002a). The analysis of the industry events lead to inductive identification of recurrent themes that structure industry discourse to justify action on the environmental front, as reported in chapter 4. I proceeded in this phase of data analysis by first reviewing all my field notes taken after each day of field work and after each informal interview, and started to note emerging common themes. Some of the themes that emerged early on during the investigation were for example *Technology as Solution*, which would later evolve into *Technology Sublime*, or *Biased Public Image*, which would later be aggregated into *Legitimacy Threat*. Subsequently, I reviewed each powerpoint presentation I had been able to obtain, and I listened to my recordings of the plenary and Q&A sessions, and expanded my initial set of emerging themes.

According to Charmaz (2006: 84), one criterion for judging the quality of qualitative research is the level of "intimate familiarity with the research setting or experience" reached by the author. This initial phase of attending industry events was used to gain a greater knowledge of the general context of environmental issues in aviation. Additionally, I tried to immerse myself within the world of aviation by registering to various email newsletters on general

aviation, on airline business, and on aviation environmental issues more specifically.

I also kept a detailed "log of the enquiry" to record all the different questions, problems, opinions received, reactions received to my project. I started this log at the very beginning of the study, months before the first data were collected, and diligently documented all the evolutions of the study, the shifts in research questions, the dead ends, returns, and cognitive ruts that I kept coming back to. Reading and reflecting on the log of the enquiry proved extremely useful during the thesis writing stage.

3.4. Phase 2: Exploring Diffusion Mechanisms Based on Interviews

The observational data was complemented by more focused, semi-structured interviews with 35 informants representing a large diversity of actors in aviation. The goal of those interviews was to capture how different actors in the aviation field conceive of environmental issues, and to elicit from them their perception of how the debate on the environmental impact of aviation has evolved in recent years. Interviews were conducted with airline representatives, airport representatives, regulatory actors, NGOs, aircraft manufacturers, suppliers, and research organizations. Table 3.1 provides a detailed description of the category of actors that were interviewed.

Table 3.1: Distribution of Interviews

Category of Actor	Number of Interviews
Airline	8
Other industry actor (airport, manufacturer, supplier…)	6
Regulator	8
NGO	7
Industry Trade Association	3
Other (Research/Consultant/Media)	3
TOTAL	35

Participants for the formal interviews were recruited in three ways. Most often, participants were people whom I met at one of the events mentioned above, whom I found particularly interesting or informative, and whom I asked to interview in more depth subsequently. In some cases, I was able to conduct the interview in person, usually at a bar or restaurant on the evening or the morning of the event. Otherwise the interviews were scheduled for a later date and conducted by phone. The second recruiting method was through personal contacts. This proved to be extremely useful to get access to local organizations in Montreal. Finally, each time I conducted an interview I asked each participant (a) whether an important category of actors had been left out; and (b) to indicate one or a few additional individuals that I might contact with their help. This snowball sampling strategy (Patton, 2002) helped me to extend my initial pool of

participants. Since the snowball sampling was initiated with a significant number of initial "threads," it mitigated the risk of tapping into one homogeneous and strongly tied social network of individuals who would hold similar views on the questions of interest (Patton 2002). The sampling strategy thus guaranteed that multiple perspectives were represented in the interview data.

Nearly all interviews were recorded with the consent of the informant, then transcribed verbatim for subsequent analysis. Within 24 hours of each interview I also wrote a Reflective Memo capturing my own personal impression of the interview and of the most salient themes that I had perceived in it, as well as any other information relevant to the investigation.

Among the 35 interviews, 8 were conducted with airline representatives. Given the small number of interviews, informants were chosen to represent diverse types of airlines, facing different constraints and challenges. Theoretical sampling is best suited to small data sets, which are not selected for their representativeness of the larger industry, but rather for their unique characteristics that are likely to provide variation along the dimensions of interest for the study (Yin, 2003: 47). Interviews were conducted with individuals who were directly dealing with environmental issues in those airlines, i.e., environmental managers, or operations managers. Interview questions were centered on the environmental issues faced by the airline, on the management initiatives and concepts used in the organization, and on concrete actions in which organizations were engaged. Detailed interview protocols are provided in Appendix.

Data analysis. Data gathered were analyzed using a grounded theory approach (Charmaz, 2006; Glaser & Strauss, 1967). Data analysis proceeded iteratively, alternating between inductive coding of data and additional data collection. The qualitative analysis software Atlas.ti was used to manage the data set (interview transcripts, reflective memos on each interview, and intermediary analysis memos), as well as for data coding.

The data analysis aimed at establishing a typology of different mechanisms through which new concepts of environmental management enter the field. Interview data provided insights into what frames, labels, and concepts are used by different actors to talk about environmental issues, and how those frames, labels and concepts have evolved in recent years.

Coding started with open codes (Charmaz, 2006). Throughout the open coding phase, I tried to keep the codes active and close to the data, trying to identify actions or processes, by using gerund forms whenever possible. I also used in-vivo codes whenever a term appeared to be particularly meaningful and was used in a specific way by industry informants. In-vivo codes are expressions or key words used by interviewees that capture a complex or specific meaning; in other words, in-vivo codes are short-cuts that condense an interpretation specific to a given social group (Charmaz 2006). Examples of in-vivo codes included: *cattle carriers* (depicting airlines as low-level transportation service, comparable to "buses," a transportation mode for the lower class, for the masses); *cash cow* (depiction of airlines as being unjustly taxed by local and

national governments through multiple levies); *balanced approach* (a governance mechanism designed by ICAO to manage noise conflicts; this approach consists in leaving the negotiation of noise issues at a local level, in each location, as opposed to trying to impose a global policy on noise regulation); *bunker fuels* (although few of my informants could say with certainty what *bunker* means, they knew that the term *bunker fuels* refers to aviation and maritime shipping, two industries left outside of the Kyoto Protocol on carbon emissions regulation).

To sustain the coding procedure, I used the constant comparison method (Glaser and Strauss 1967, Charmaz 2006). The method consists of systematically comparing different sources of data for concordances or inconsistencies. I started by a comparison *within* interviews, looking for multiple statements on similar topics or issues, as a way to illuminate internal inconsistencies or contradictions within the discourse of each informant. For example, one such inconsistency was the repeated framing of *environmental action as consuming scarce resources*, i.e., as something costly that airlines could only turn to after they had taken care of other, more pressing needs, versus the framing of *environmental action as synergy*, i.e., as something that is a natural by-product of other efforts on fuel saving or air traffic management improvements. Both framings were used by the same respondent in several interviews. I then continued with a systematic comparison of themes *across* interviews, and compared what informants in each stakeholder group had to say on similar topics or issues.

During this first phase of coding I also used line-by-line coding, as recommended by Charmaz (2006). This procedure, in which each line of transcript is coded separately, forces the researcher to look at the data with fresh eyes and to question the meaning behind every single phrase or portion of phrase. This rather time-consuming coding procedure can help to identify implicit meanings and idea associations that may not have appeared at first sight (Charmaz 2006). I used line-by-line coding only on selected passages of the transcripts, to expand the theoretical richness around given issues of interest to the investigation.

The second phase of coding consisted of axial coding, which is defined as a second-order conceptual work in which common underlying conceptual categories linking various open-codes are sought and identified systematically (Charmaz 2006). This phase of axial coding led to the identification of the three mechanisms of relabeling, bundling, zooming out and the larger concept of naturalization described in chapter 5.

3.5. Phase 3: Tracking Concept Evolution through Content Analysis of Archival Data

In the third phase of this investigation, archival data collected at the level of the organizational field was analyzed using content-analysis procedures to explore concept evolution. In recent years, there have been more studies using archival and media data to analyze institutional change (Ventresca & Mohr, 2002). Content analysis methods have been employed to assess how the volume

and tone of media coverage may influence investor evaluations of initial public offerings (Pollock & Rindova, 2003), or to track changes in patterns of word use and word association over time (Bartunek & Spreitzer, 2006; Ghaziani & Ventresca, 2005; Ocasio & Joseph, 2005).

Different kinds of media archives have been used by researchers trying to assess evolution in the meaning or structure of social phenomena (Mohr, 1998; Ventresca & Mohr, 2002). In this study, I used content analysis of a trade publication to capture evolution in the discourse generated at the level of the organizational field.

Frame analysis (Creed et al., 2002a) was used to code changes in the way environmental issues are conceived and acted upon. The concept of frames, first formulated by Goffman (1974), has been used by social movement scholars interested in understanding how the production of meaning and ideas could impact social movement processes (Benford & Snow, 2000). In this phase of the study, frames associated with environmental issues were identified using a manual coding procedure. Retroductive coding (Creed, Scully, & Austin, 2002b) was used to develop codes by alternating between a priori codes based on prior research and inductive codes emerging from the data.

Since the frames identified inductively and used for the archival study were informed by my field work, they will be described in greater detail together with the results of the archival study, in Chapter 7. Presenting the methods of the archival study after the results of the field work will respect the order in which those studies were designed, and will allow to reader to understand how the latter

study builds on the results of the former. Thus, all the details on the data source, data coding and analysis for this last phase of the study are provided in Chapter 7.

3.6. Integrating the three phases of data collection

This investigation began as a study of concept diffusion. It is only during the course of the research that questions pertaining to industry ethos, threats to legitimacy, and issue evolution emerged as central themes that needed to be explored further. Thus, the focus of the investigation and the specific research questions explored in the final phases of the study evolved over time, following emerging findings, phases of data analysis, and feedback received from committee members.

The first two phases of data collection – observation at industry events, and individual interviews – formed the fieldwork part of this investigation. Both phases were designed to collect *in situ* data. Thus, the data collected through fieldwork were used to build theory on the *interpretive mechanisms* underlying the diffusion of sustainability in civil aviation, to answer the first research question formulated in chapter 2. I present the findings of each phase of data collection sequentially, in chapters 4 and 5.

But I also used the individual interviews to inquire about potential *evolution* in the way the industry understood the concept of sustainability, thus starting to address the second research question formulated in chapter 2. Chapter 6 reports on those findings, and shows that the nature of the environmental

problems faced by the industry changed dramatically over the course of the last decade, with important consequences for the structure of contention in the organizational field of aviation. Through those interviews, I also realized that industry actors had only started recently to talk about the integrated concept of sustainability, and that the concept required integrating and reframing older debates, around long-standing environmental issues in this industry. For those reasons, the last phase of data collection – the archival analysis – was designed to capture a broader phenomenon, namely the evolution of environmental issues and their framings over the last decade. Chapter 7 reports on the findings of this archival study.

Chapter 4. ENCOUNTER WITH AN INDUSTRY UNDER THREAT

"I've grown up inside aviation, the airline business, and I remember flying was charming. But I remember smoking was charming too. And today, smoking is banned. […] I hope that doesn't happen with aviation."

IATA chairman, Aviation and Environment Summit, Geneva, April 2008.

Beginning an investigation of aviation in the spring of 2008 meant encountering a global industry in crisis. Oil prices were reaching peak historical levels and grinding corporate profit margins. Each week a new airline would file for bankruptcy. Yet the severe economic situation wasn't the only source of worry for industry actors, who felt they had to face an arguably much deeper and worrisome threat: a crisis of public image. This chapter presents ethnographic data on my encounter with aviation as a way to identify important emerging themes, which will later guide and structure the subsequent parts of the investigation. The chapter is written as the narrative account of my participation in one particularly significant industry event, the 3rd summit on Aviation and the Environment, which gathered all major actors in civil aviation in Geneva, in April 2008. However, the chapter also integrates anecdotes and observations gathered at other industry events that I attended in that same year, which dealt similarly with environmental issues in aviation.

4.1. Encountering Aviation

The conference was held in a five-star hotel close to the Geneva airport. I entered the hotel that Tuesday morning, and followed the signs to a large underground conference space, composed of an auditorium fitting the couple hundred attendees, and a rather small lobby area hosting a few corporate stands presenting the services or products of aviation firms. The Summit program hadn't yet begun, and conference participants were casually chatting in small groups of two or three, a cup of coffee in hand, standing around the many high tables, or comfortably sitting in the armchair corners that surrounded the stands area. As I would notice later on, many attendees would spend a considerable time in this entrance space, during the long pauses arranged in the program, or sometimes during keynote presentations or panel discussions.

But that morning my arrival on the conference premises was dominated by a brief worry: was I under-dressed? As soon as I walked into the hotel hall, I was reminded that industries develop implicit social norms, including clothing norms, in which members are slowly socialized. That day, I had opted for a jacket and pants, when nearly all attendees wore a suit, most often of a conservative type, a dark blue, or some grey. This was my first aviation industry gathering, and I still needed to learn its basic access codes. I hoped my status as a student would "save me" this time. I confessed my awkward feeling to a transportation specialist in the room from a research institution, who confirmed: "when I go to meetings in the train industry they all wear T-shirts; here they're

all in suits." His analysis followed: "they still think of themselves as an elite, the elite of transportation."

The women attending were similarly very elegantly dressed in chic suits and silk scarves – but they were very few. I found the small representation of women at this meeting quite striking. Across all the industry events that I attended, the percentage of women represented was between 5 and 10 %. Based on the people in attendance, aviation seemed to be a male industry.

I entered the dim-lit auditorium and sat at one of the long tables that had been arranged in rows, facing the large, brightly illuminated platform where panellists and moderators were sitting. In front of each place, a detailed program and two recycled paper notepads provided by Airbus and Boeing – competing up to the last marketing details! – were awaiting the conference participants. A couple of television cameramen were installed in the back and front of the auditorium, capturing images of the speakers and of the attendants. Two gigantic screens projected the powerpoint presentations and the television images, alternating between close shots of the speakers and large views of the listening audience.

As the presentations and the first panel began, I started to wonder if the members of this industry were not using a coded language specifically designed to keep outsiders in the dark. I had started to note frantically on a sheet of paper all those terms and obscure acronyms that I didn't understand, hoping to ask someone what they meant later on, but to my dismay the list kept growing and growing: RNAV, CDA, RNP, ATFM, ADS-B, etc… (see the List of

Abbreviations in appendix for a short selection of acronyms). Members of the industry themselves admit that they sometimes find it hard to keep track of this myriad of codenames. While referring to this oddity during a panel presentation, a pilot told an industry joke about a pilot's spouse who remarks that "the only thing you need to be a pilot is know the alphabet and how to string those acronyms together."

Attendees came from all over the world, of course – isn't aviation the prototype of a global industry? Yet many here seemed to know each other from previous occasions. This early impression would be later confirmed by my subsequent experience attending four industry conferences and other smaller meetings over the course of one year; by the last meeting I realized that I had seen half of the attendees at a previous occasion. Informal discussion with various attendees also revealed that they typically had spent their entire careers in aviation. Senior officials in regulatory governmental agencies or in trade associations often started their careers in more operational functions at airlines or airports.

There also seemed to exist an unspoken hierarchy among the different players, with aircraft manufacturers and airline executives occupying the upper echelons, and service providers and suppliers the lower ones. At the end of the first day, a small traffic jam was forming in front of the table where glasses of wine were waiting to be picked up at the cocktail party. A representative from a small service supplier firm interrupted our conversation abruptly and moved aside swiftly, as a middle aged man wearing a grey suit was approaching: "Give

way to the Sir from the Manufacturer!" It was a representative from Airbus – who left after an awkward "thank you" and a brief laugh as his only reactions to the sarcastic remark.

In the course of this three-day meeting, three themes seemed to be recurring and to characterize the state of mind among many participants: 1) the industry was going through *a public image crisis*; 2) *environmental issues* were highly contested and subject to debate; and 3) environmental challenges were viewed as an opportunity to affirm the *unique identity of the industry*, and reignite its pioneer spirit. In the remainder of this chapter I describe the three themes successively.

4.2. A Crisis of Public Image

Both in the official discourses and in private conversations, actors expressed a sense of crisis in the public image of their industry. Perhaps most illustrative was the comment made by the Chairman of IATA, the trade association of international airlines, who provided a long term perspective: "I've grown inside aviation, the airline business, and I remember flying was charming. But I remember smoking was charming too. And today, smoking is banned. […] I hope that doesn't happen with aviation." Drawing a parallel with the smoking industry is not a mild image. It demonstrates clearly that major industry actors felt threatened. Numerous other industry actors expressed some alarm about the public image of aviation. The president of the major air traffic control trade association, in a similarly dramatic speech, mentioned his fear that aviation could

become “the next tobacco industry, a social outcast, a pariah industry,” and urged aviation to act before it lost its “social license to operate.” Some speakers suggested that the industry had already reached the status of ‘social outcast’. A representative from British Airways stated that “airlines are routinely accused of being selfish, or even sinful organizations, with little concern for their environmental impact.” An analyst stated that “Standard Life […] has taken aviation, airlines and so on, out of their ethical fund. […] Who else is being taken out of the ethical fund? You are keeping company, according to Standard Life, together with tobacco manufacturers, with arms manufacturers, and with pornographers. This is not good from a PR perspective, I would venture.”

This feeling of being targeted was also a fear of losing control: one high level representative from a trade association stated that “there is a huge risk that aviation lose the aviation related issues.” In other words, industry actors were afraid that the deteriorating public image of the industry would lead to solutions or constraints being imposed on the industry by regulatory authorities outside of aviation. Thus, the industry felt motivated to act quickly, in order to prevent the issue of environmental impact from being “taken outside the aviation sector”.

Perception of being targeted unfairly. Not only was the industry feeling targeted, it was feeling unfairly treated by the public, some NGOs, and the media. The president of ACI talked about the “aviation obsession of some activists”, and argued that “many of the accusations levelled at the industry are based on false assumptions and misinformation that tend to make travelers feel

guilty and create a public perception that is warped. So it is our job collectively to set the facts straight, […] acknowledging aviation's impact and explaining our solutions."

Several attendees mentioned that they felt a general public opposition to aviation, which was manifested through criticism of the multiple environmental impacts of the industry. For example, there was a general agreement among respondents interviewed at these conferences that aviation's share of global climate change emissions was disproportionately small in comparison with other sectors such as automotive or agriculture, and did not justify the level of public attention and criticism that aviation was receiving. One airport official mentioned that "people are using noise as something they can oppose, but they're just opposing the airport itself."

There was also general agreement about the important benefits that aviation brings to the world, and most critically, about the lack of recognition that aviation was receiving for it. The CEO of Airbus lamented the short-sightedness of one anti-aviation group, arguing that "by stopping flight we also stop progress". Aviation was presented as "the single most important catalyst for economic and social development."

Calling for active industry image management. Many speakers stressed the necessity to act proactively, to manage the public image of the industry. As a prominent speaker put it, "aviation must be seen to be playing its part". The CEO of CANSO (an air traffic management association) argued that the key question

was to ask the flying public: "what can we do to make aviation sustainable *in your eyes*?" [emphasis added].

There was much discussion of how to change the image of the industry, and a variety of approaches were recommended. All included some impression management strategies, to counteract the attack on aviation's image. The CEO of Airbus described an advertisement that circulated in the UK press earlier that year: "it was basically a large photo of starving children, with a dead camel shown in a desert around them, and underneath was a bold, cigarette-style warning, which went: 'health warning: aviation growth will destroy our chance of tackling global warming'. […] There are these groups that have those, let me say, very crude approaches. This is the classic example of what we, aviation industry, are also up against, campaigners that are thick on headlines, and pretty light on facts. Such well-meaning but misinformed lobbying is short-sighted." He concluded, "we must educate with facts rather than emotive pictures." In another panel, one airport environmental manager recommended another approach, arguing that "logical answers to an emotional problem don't work." The oil industry was at some point held up as an exemplar that managed to successfully change its image, and expand its image to become the larger 'energy sector', through investment in wind farms, solar energy, etc. A panel speaker concluded that "the energy industry is maybe a few steps ahead of the transportation industry in terms of changing the perception."

4.3. Environmental Issues Debated

The second theme that I noted at this event was the amount of debate surrounding the overall subject of environmental issues. Furthermore, people not only discussed such things as what type of policy instrument would be most practical to put in place, or at what level emissions should be kept track of, but also what counted as emissions in the first place, and how to measure them. The very nature of what constituted an "environmental issue" was variable and seemed to have changed profoundly for this industry over the course of a few years.

What is the Issue? To begin with, the new issue of aircraft engine emissions generated a striking uncertainty about the real environmental impact of flying. What constituted an environmental issue itself was debated. While the contribution of CO2 to the global greenhouse effect was not contested, there were divergent estimates of the contribution of aviation to this CO2 figure produced by human activity. More surprisingly even, there were discussions about the so-called "non-CO2" emissions, and the real effect of cirrus clouds and vapour condensation trails left by aircrafts in the sky: were those a form of environmental pollution? If so, what was their contribution to climate change? Most industry actors underlined the lack of scientific evidence and the remaining scientific debate on those issues, and emphasized that public perception was in large part the most significant issue, rather than the emissions themselves.

A tradition of local solutions. Of course aviation had to deal with environmental issues like noise or local air quality problems for decades, but those issues were local: they existed differently in each place, and different solutions were elaborated to address them. For example, the diversity of situations at each location around noise was stressed repeatedly by different speakers. As one airport environmental manager explained: "you cannot compare airports easily. Each is unique, because of climate, regional constraints, etc." One presenter from an Austrian airport used the metaphor of the winery: "what makes a grand cru? It's a combination of factors: the grape, the climate, the processing, etc. Similarly, at a given airport different factors come into play to define the environmental equation: climate, density of traffic, runway configuration, population density around airport, geography". Consequently, according to this presenter, only custom-made solutions to noise should be sought, not standard air traffic management solutions that could be implemented across various airports. The issue of greenhouse gas emissions produced by aircraft engines, however, was posing a number of novel challenges to the industry. As opposed to the old noise or local air quality issues that prevailed around airports, greenhouse gas emissions, given that they represent a "global issue," required "a global approach" and the cooperation of many stakeholders in the complex system of aviation.

Systemic constraints. For many industry insiders, part of the issue was also intrinsically located in the highly integrated system of aviation that

constrained implementation of system-wide change. There was a widespread frustration expressed about the persisting fragmentation of national airspaces in Europe. Industry actors unanimously criticized governments for their slowness in implementing a project (called Single European Sky) that would straighten flight routes across European borders and potentially save 12% emissions of CO2. Other attendees mentioned the persistence, in an era of satellite communications, of an old visual positioning system in the US, which was designed in the 1950s.

There were also multiple mentions made of the growing interaction between environmental issues. For example, the redesign of flight routes near an airport to limit the noise would end up increasing CO2 emissions in the long run. It was no longer possible to work on each issue independently, and a "global perspective" was necessary, that required considering the whole system of aviation. The CEO of the air traffic management association CANSO stated: "Today aviation continues to be regulated and is still in many places operated as a series of independent sectors. This drives a mindset of "us versus them". Our aviation value chain is fragmented at every level – institutional, regulatory, strategic, managerial, technical and operational. We live in separated worlds that do not understand each other very well. We live in independently managed silos that are entirely focused on individual sector performance. We have lost sight of the greater good – aviation system performance." He concluded: "We must change our mindset and see aviation as a single global system."

An airport representative underlined the complexity of the regulatory framework which limits the airports authority to adopt operating restrictions or

measures around specific environmental issues. His interpretation was that although "airports produce very little emissions themselves," they are on the front line and are perceived by the public as being major offenders. He concluded that "airports are the first victims of the fact that we are a system." All those comments pointed to a definition of "the issue" as a coordination problem amongst actors in a highly complex and interactive system.

4.4. Affirming the Industry Identity

The emergence of widespread perceptions of an industry in crisis and ongoing debate about key environmental issues were inextricably linked to the third recurrent theme in the public discourse at these conferences: that environmental issues provide an opportunity to reaffirm the identity of the civil aviation industry, as well as the fundamental values that the industry was founded on and still stands for.

Industry cooperation. In spite of – or maybe because of? – the identification of systemic constraints mentioned above, the value of industry cooperation was celebrated in numerous ways. One presenter representing an airport stressed the necessity to "work as a united industry." According to him, the long term answer to environmental issues would not come from one miraculous solution but from persistent efforts that required coordination among actors: "there is no silver bullet, but silver buckshots:" a myriad of small actions from many different actors, that when added up would make a difference.

A senior executive from a US trade association mentioned, “I believe that when all the disparate segments of the aviation community come together in common cause, there is little we cannot achieve.” Past crises, such as 9/11 and the SARS crisis were mentioned as exemplars in which the industry had been able to react and respond rapidly in a coordinated way: “coordinated response has always been positive for the industry”. Another senior executive mentioned the “great results on safety [that were] a result of 60 years of industry cooperation. This approach will work also for the environment”.

An Unrelenting Belief in Technology as the Solution. Most pervasive throughout the presentations and discussions of alternative solutions was the underlying belief that only technology could ultimately provide an answer to the environmental issues of aviation. During the gala dinner at the Summit on Aviation and the Environment, the international airlines trade association IATA, which sponsored the dinner, projected a short movie on the topic. Starting with images of aviation pioneers at the turn of the 20th century, the video presented the accomplishments of aviation in the form of a saga, a narrated succession of challenges and successes, leading to today’s latest challenge to the industry: climate change. The video ended with the phrase: “*Technology is the answer to the problems it creates*.” At the same dinner, one governmental official with 20 years experience in airport management confessed to me his fascination for the technological marvel of flying: “when you think about it, flying was unthinkable not so long ago. Now we take it for granted. We say, ‘I just took the plane from

A to B' and assume it's easy. We don't see all that it's taken to make it possible." This unrelenting belief in Technology seemed to be part of the industry identity: Technology had made aviation possible, and it would ultimately be the answer to its current challenge.

Nostalgia of Golden Age. There were some more explicit mentions made of an industry ethos, through repeated calls for what some speakers called "a new pioneer spirit of aviation." One airline executive wished for a "revival of the pioneer age" of aviation, when new technologies and designs were mushrooming all around the world. She hoped that "the spirit of entrepreneurial experimentation [would] permeate worldwide" once again. Another speaker from an airline spoke about the values of innovation and enthusiasm that characterized the industry, stating that "air transport was built by turning dreams into reality." An ex-pilot currently with senior level responsibilities at the FAA said: "It reminds me of one of my favourite quotes from aviation icon Eddie Rickenbacker. He said, 'Aviation is proof that, given the will, we have the capacity to achieve the impossible.' I believe those words apply to the [environmental] challenges we are addressing today." All those comments expressed nostalgia about the aviation golden age, the age of pioneers, and a wish to revive it amidst the current challenges facing the industry.

4.5. Implications for the Investigation

Witnessing *in situ* how aviation professionals interpreted the challenge represented by the environmental impact of flying thus leads to several key observations which oriented my subsequent investigation:

- The *problem at hand* was not clearly and unequivocally defined; rather, it was subject to debate and thus to a collective negotiation among various actors. As a consequence, it was necessary for the investigation to retrace how various environmental impacts have been perceived and defined over time.
- Interpreting the scope of the environmental impact of aviation had consequences for the public image of the industry. Aviation leaders felt that their activity was on the verge of losing social approval, and they were at least as much concerned about the "public image sustainability" of their industry as they were about "environmental sustainability" itself. Both aspects were apparently inextricably intertwined.
- Interpreting the environmental impact of aviation was also the occasion for the reaffirmation of some deeply held values characteristic of the industry, as manifested through a celebration of Technology and references to attempted revivals of the Golden Age.
- The meaning of the word "sustainability" was not defined independently and unequivocally. Rather, interpreting the issue at hand, affirming the industry identity, defending its image, and defining what the

sustainability of aviation meant --all those processes were happening at the same time.

These initial observations led to the subsequent identification of two major lines of inquiry, which structure the remainder of the results chapters.

First, as the ethnographic account has shown, what sustainability means is not given; rather, it is the result of a complex process of reality interpretation. The first line of inquiry deals with the interpretive mechanisms underlying the diffusion of the concept of sustainability in this industry.

Second, the ethnographic account unearthed an important shift in industry problems from noise to emissions over the last few years, with important consequences for the larger discourse on environmental management in general, and on sustainability in particular. The second line of inquiry deals with the relationship between issue evolution and management concept evolution.

Structure of the following chapters

The following chapters develop a perspective on the spread of sustainability using the analytical lens of social constructivism (Berger & Luckmann, 1966). According to this theory, social actors constantly reconstruct social reality through day-to-day interaction. Although constructed interactively and subjectively, social reality acquires permanence and stability through recurrence: it is the repeated enacting of past behaviour that progressively leads

to the emergence of social rules and routines guiding action. As those social artifacts are used by social actors, they end up becoming taken for granted and institutionalized. A social constructivist perspective on the diffusion of management concepts emphasizes two parallel processes of collective reality construction: it is not only the meaning of the management concept that is collectively defined; the *issues* (or problems) that are addressed by the concept are also subject to collective definition. For example, Gherardi & Nicolini (2000) have shown how organizational knowledge on safety is dependent on the construction and negotiation of a collective understanding of what "safety" means, through the definition of specific terminology as well as indicators and metrics.

Chapter 5 explores explicitly the interpretive dynamics at play in the diffusion of sustainability in this industry. This chapter takes a "snapshot perspective" on the phenomenon, and describes the process of interpretation based on data collected through individual interviews with industry actors.

Chapter 6, in contrast, begins to integrate the temporal dimension by describing how the rise of a new issue, greenhouse gases emissions, modified the *structure of the field*.

Finally, chapter 7 takes a longitudinal perspective to examine how various environmental issues have been defined and framed in aviation over the last decade, using archival data collected from an industry trade publication.

Chapter 5. NATURALIZING SUSTAINABILITY

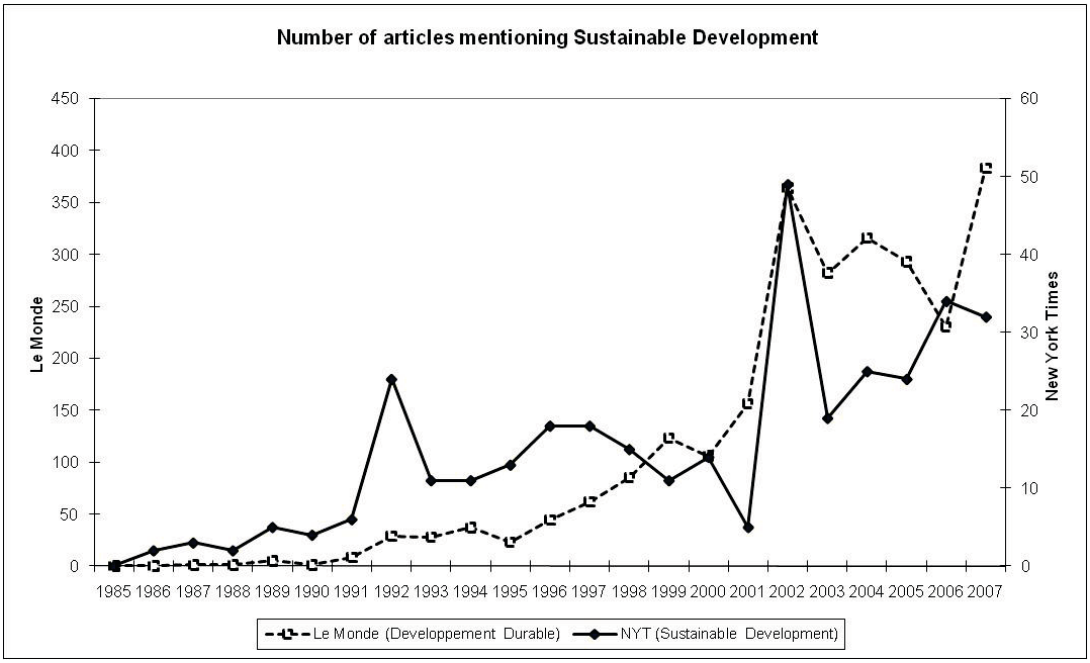
"Aviation is such an evolving world, so I think everything with it works towards sustainability, you know, we have reinvented our equipment, you know, we really have an amazing record coming in [...]. Everything we did has highly contributed to sustainability"

Informant #13, regulatory body.

The concept of sustainability has become pervasive in many aspects of our societies, and has become central to debates in a large number of industries. Figure 5.1 shows the diffusion of the concept of sustainable development[1] at the societal level, captured through two generalist newspapers in France and in the US. While a complete history of the emergence of the concept of sustainability is beyond the goals of this thesis, Figure 5.1 does show that this new concept appeared in generalist discourse towards the end of the 1980s, and that its diffusion was marked by punctuated surges, notably in 1992 (coinciding with the first Earth Summit in Rio) and 2002 (coinciding with the International Summit on Sustainable Development in Johannesburg).

[1] For this simple exercise the term *sustainable development* was preferred over *sustainability* because the latter term may sometimes be used in a totally different context (e.g., to talk about the sustainability of a precarious situation, etc...).

Figure 5.1: Concept Diffusion at the Societal Level



There is no doubt that the labels (sustainability or sustainable development) hide a wide divergence of meanings[2], as mentioned previously. But what happens when such a controversial and malleable umbrella concept lands into the existing sets of issues, meanings and interpretations that

[2] Most interviewees talked about sustainability or sustainable development in an indiscriminant manner, and I am using both terms interchangeably in this thesis. However, some informants (NGO representatives) were very careful in their use of terms, and openly rejected the expression "sustainable development." Indeed, many environmentalists have criticized the concept and qualified it as an oxymoron, arguing that any economic development has an ecological price and is intrinsically unsustainable, and that the whole concept of sustainable development was just a clever invention to justify pursuing industrial growth.

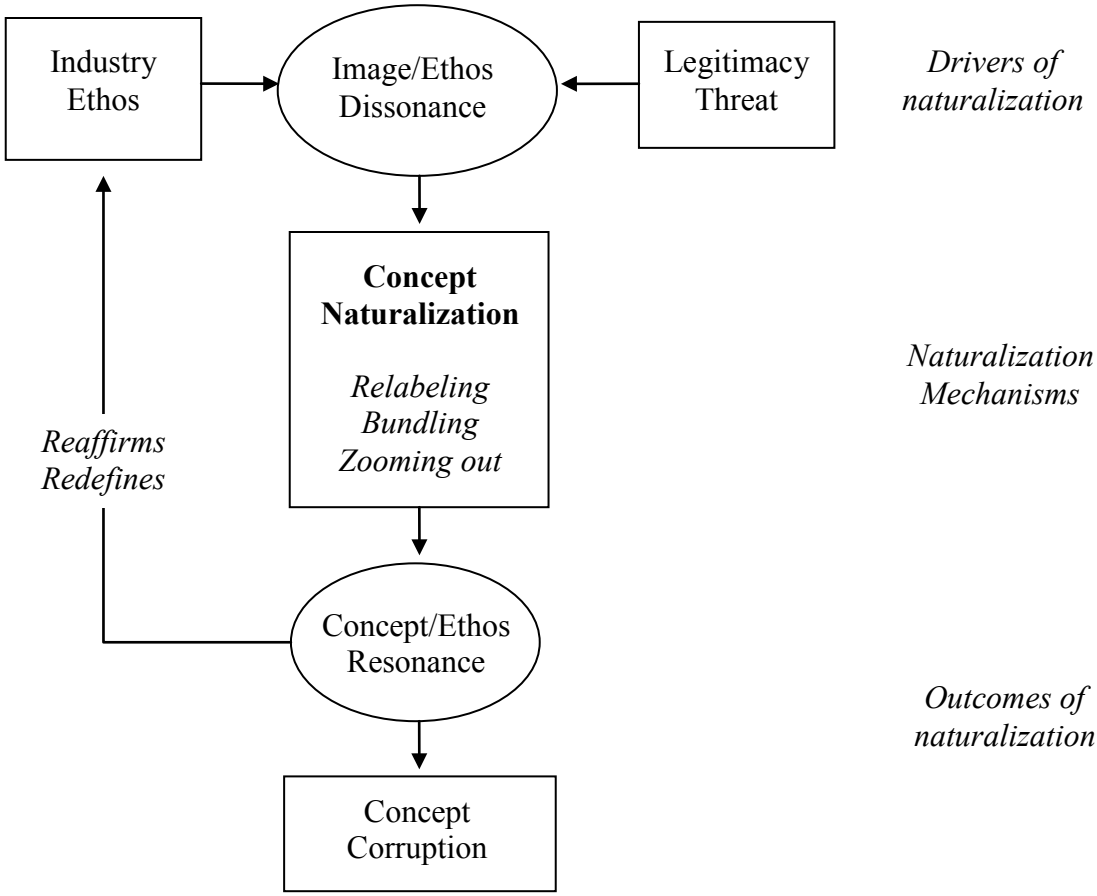
characterize a given industry context? This chapter advances the argument that the concept of sustainability is being modified and transformed as it diffuses in the aviation industry, through a process that I label *naturalization*: the concept needs to be reinterpreted and redefined in ways that are specific to the context prevalent in aviation.

This process of naturalization is prompted by dynamics of image and identity (Dutton & Dukerich, 1991), i.e., by a dissonance between the perceived image of the industry (how industry insiders believe others view them) and what I call the industry Ethos, i.e. the core values that define aviation and set this industry apart from others. Another driver of the process of naturalization is a perception of legitimacy threat experienced by the industry as a whole. The interpretive process of naturalization has two important outcomes. First, it allows to reduce the dissonance between public image and industry ethos, by harmonizing the naturalized concept with the industry ethos, thereby creating resonance. Second, the process of naturalization also results in a naturalized concept which is partially tainted by the specific values and priorities of the industry. As other researchers have put it, the concept is slightly *corrupted* (Lozeau et al., 2002). Through this interpretive process, the industry ethos is also being reaffirmed.

The theoretical model underpinning the process of naturalization was created inductively, by multiple iterations between the interview data and emerging analytical themes.

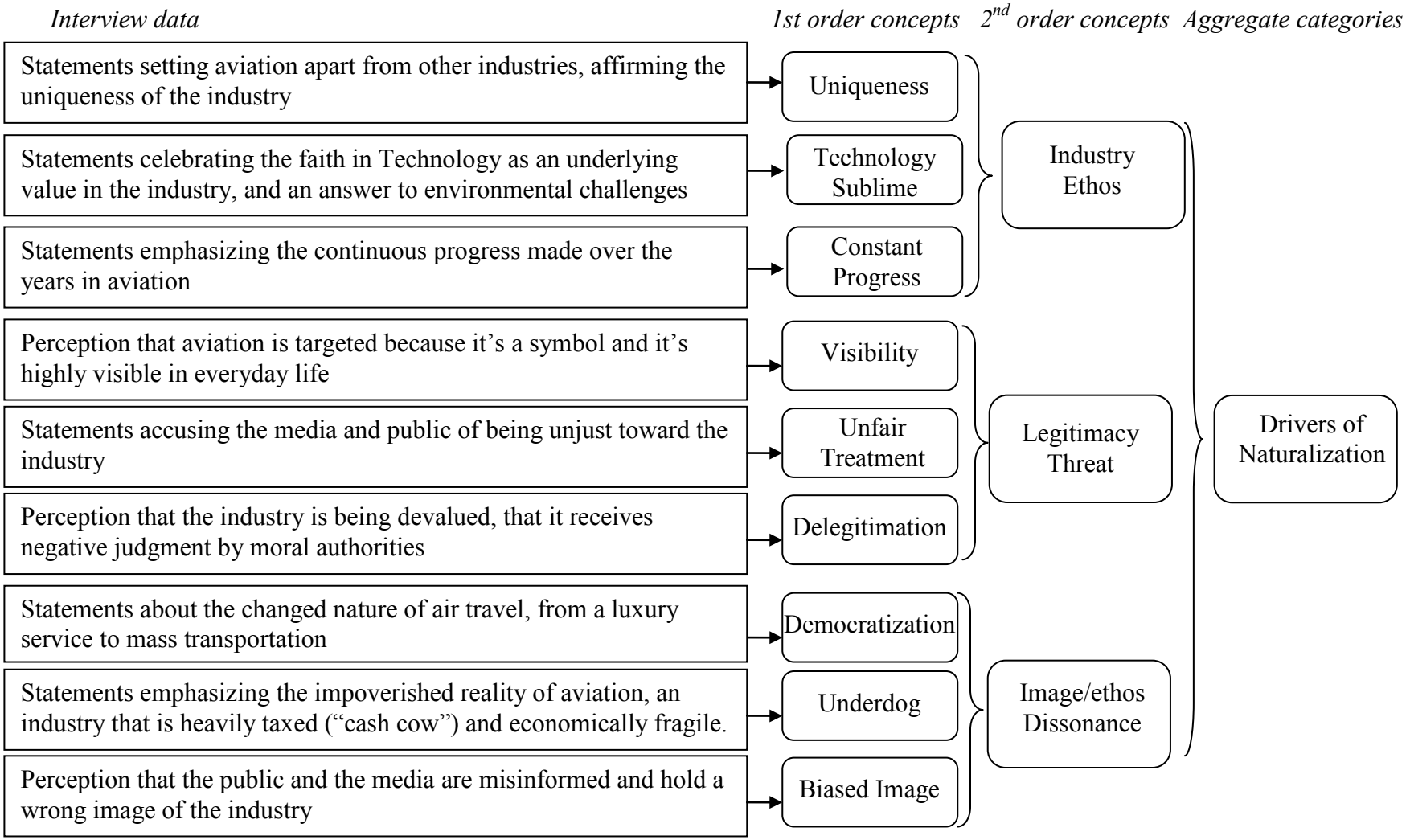
Figure 5.2 presents the conceptual model depicting the process of naturalization, including (a) the drivers of naturalization, i.e. the perceptions that set the process of naturalization in motion; (b) three distinct mechanisms by which the naturalization process unfolds; and (c) the outcomes of naturalization, i.e. the consequences of naturalization for the management concept and for the collective sense of identity in the industry.

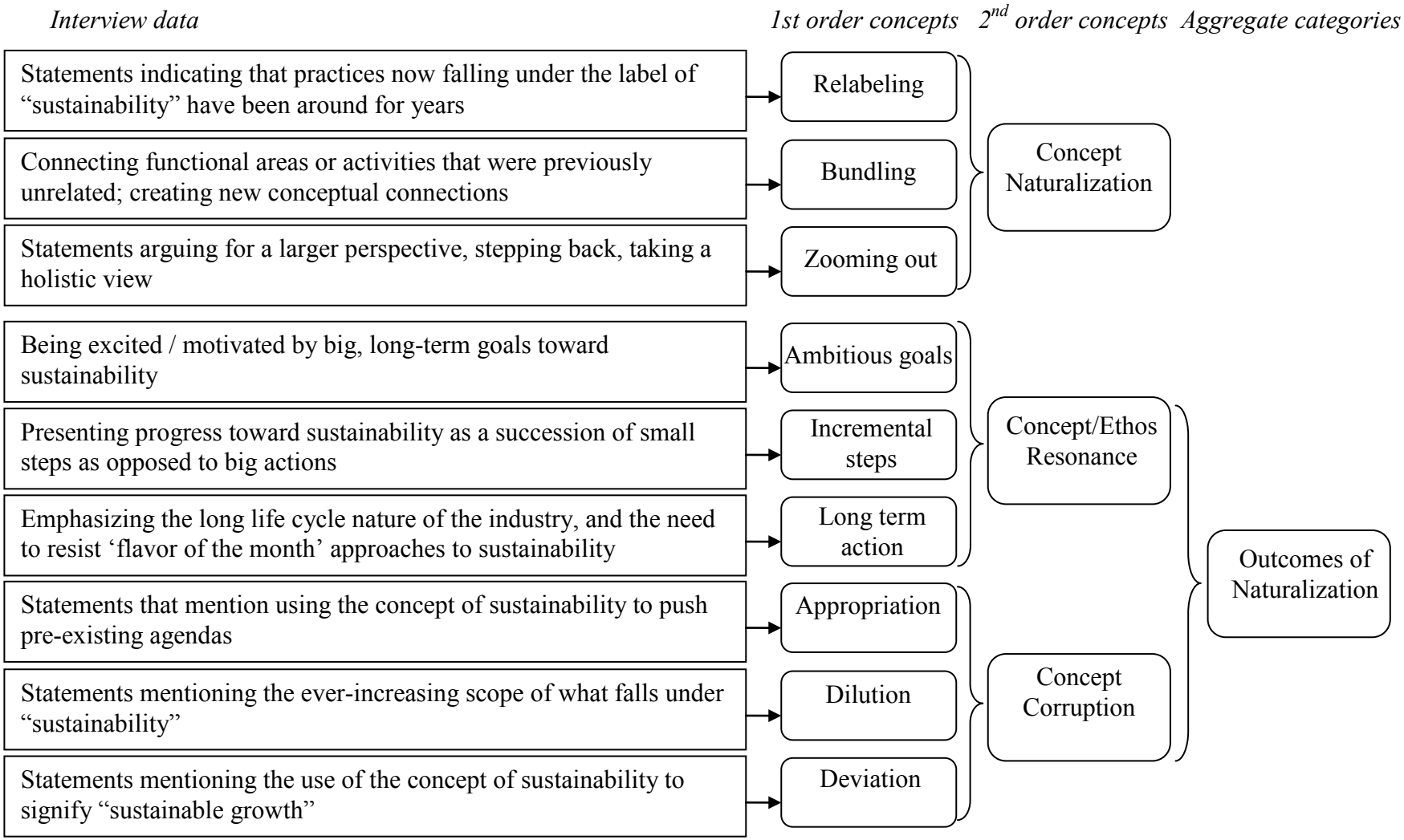
Figure 5.2: Concept Naturalization Process



Following the practice adopted by previous qualitative researchers (Corley & Gioia 2004), I present in Figure 5.3 the overall structure of the data and the corresponding 1st order and 2nd order themes that led to this theoretical model.

Figure 5.3: Data Structure




Interview data
1st order concepts
2nd order concepts
Aggregate categories
Statements indicating that practices now falling under the label of "sustainability" have been around for years
Relabeling
Connecting functional areas or activities that were previously unrelated; creating new conceptual connections
Bundling
Statements arguing for a larger perspective, stepping back, taking a holistic view
Zooming out
Concept Naturalization
Being excited / motivated by big, long-term goals toward sustainability
Ambitious goals
Presenting progress toward sustainability as a succession of small steps as opposed to big actions
Incremental steps
Emphasizing the long life cycle nature of the industry, and the need to resist 'flavor of the month' approaches to sustainability
Long term action
Concept/Ethos Resonance
Statements that mention using the concept of sustainability to push pre-existing agendas
Appropriation
Statements mentioning the ever-increasing scope of what falls under "sustainability"
Dilution
Statements mentioning the use of the concept of sustainability to signify "sustainable growth"
Deviation
Concept Corruption
Outcomes of Naturalization

5.1. Drivers of Naturalization

Three recurrent themes across interviews were (a) the affirmation of an Industry Ethos; (b) a pervasive feeling of legitimacy threat; and (c) a resulting dissonance between this ethos and the public image of the industry.

Affirming the Industry Ethos

A number of elements were invoked by respondents to qualify the uniqueness of aviation as an industry, and how those unique characteristics explained what sustainability meant for aviation - or what it should mean. In a sense all those elements compose what I call an Aviation Industry Ethos: some fundamental values, images, and feelings that are shared by aviation people. While previous scholarly work has developed and refined the concept of identity at the organizational level of analysis (Dutton & Dukerich, 1991; Dutton, Dukerich, & Harquail, 1994; Gioia & Thomas, 1996), I argue here for the existence of an identity or ethos at the level of the industry, and I explain how this industry Ethos contributed to the reinterpretation of the concept of sustainability. The aviation Ethos is described below through some of its characteristics, including the affirmation of the uniqueness of aviation, the technology sublime, and the idea of constant progress made. Representative quotations are provided in Table 5.1.

Table 5.1: Representative Quotations: Drivers of Interpretive Work.

Theme	Representative Quotations
	2nd order theme: Industry ethos
Uniqueness of aviation	"All the time you'll see the airlines will really get themselves in trouble... where they'll go out of the industry to get, you know, they'll go to the chemical industry that's been making 50-75% profit, and they'll try to get the chief financial officer over to the airline. And he tries to do the same thing he did with the chemical industry. You know... You can't tell the pilot you have to land with only 1% fuel left. You can't think shortcuts on some of these things. You have to include weather and... So you find out that you can't use the same business models from other types of industries" (informant #11, regulatory agency). "Aviation is not your regular business, [...] When people start a business they don't always think about the aviation industry, because it's sort of, it doesn't quite fit with the other moulds" (informant #16, NGO).
Technology Sublime	"When I think about it, [...] you know, aeronautical engineers, really are extraordinarily creative. Even flight itself is quite counter intuitive. And certainly the great events that have been made, taking human beings into space and to the moon and etc. Who would have thought this could be possible? So who knows maybe they will find a solution" (informant #10, Government). "I think that it is technology that has improved our quality of life until today, and it is technology that will allow us to make aircrafts more respectful of the environment" (informant #20, aircraft manufacturer). "It's an industry that's very proud of its accomplishments, that really think they are the best, because they have the technology. 'Why are those people so upset? We are so good!' you know, so there is still a way, a little, to go. And instead of saying 'why are they blaming us?', say 'what is it that we are doing wrong?' you know. And that's not an easy message to pass, because they are so technology aware, they think we are doing our best" (informant #13, regulatory agency). "People want to have a new way of flying, but that will only be possible with new technology, and we will have to wait a bit more to see that" (informant #13, regulatory agency).
Constant	"There have been orders of magnitude improvements in terms of noise, and air quality coming

progress	from aircrafts." (informant #2, airport). "Aviation is such an evolving world, [...] you know, we have reinvented our equipment, you know, we really have an amazing record coming in, just watching, five times the number of people now, being 70% more efficient than 40 years ago, name one. You have a lot of new technologies, new technology on the aircraft, you have new technology to control the aircraft, we're flying differently, you know we've reinvented the way we fly, you have to realize that many years ago we were flying with reference on the ground, now we're flying with references in the sky. We reinvented the way we fly, the equipment we're flying with, etc. We have reduced amazingly our footprint, our pollution in terms of noise, you know, we're 75% less noisy, we are 70% more efficient,[...] we had all that evolutionary technology continually being delivered, but we were more successful than anybody expected, to be very realistic, there were very few activities that were so successful, you know, we can talk about IT, we can talk about communications, and aviation, it's three of the big evolutions that we have seen" (informant #13, regulatory agency). "Within the aviation industry, the perception [of industry proactiveness on environmental issues] is very good, because of the progress, the strides that have been made, particularly under IATA, and you know, I must say, I'm impressed by the very stringent steps IATA has taken, and I'm impressed by the various efforts, even individual efforts by people like Branson, Virgin, Green Airlines, that kind of thing" (informant #17, regulatory agency).
	2nd order theme: Legitimacy Threat
Visibility of aviation	"Aviation has been such a target and is so obvious a target for so long" (informant #2, airport representative). "Airplanes are easy targets, they have huge engines, that consume a lot of gasoline" (informant #29, airline representative) "Unfortunately we are an emblem of greenhouse gases because we are in the sky - we're the only ones up there" (informant #21, airline representative). "So climate change I think started to be a big issue for aviation a little bit earlier than for other activities because [...] we operate in the upper atmosphere, and people linked very much climate and the skies, you know there is this natural link that you say, oh, yeah the climate, the sky, the

	clouds, the sun, you know, the airplanes (informant # 13, regulatory agency). "To give you an example, let's say there's an air crash, and 100 passengers die, it will hit the news. It will go to all the news channels all over the world. The whole world will know that on that particular location an aircraft has crashed. But if you look at a whole year, maybe that's the only accident in the aviation. Hundreds of people die in traffic accidents, and the fatalities in traffic, in auto traffic is much more than in aviation, but nobody complains about it because it has become quite common. My point is, if something happens in aviation it has more impact in society" (informant #13, regulatory agency).
Public opinion is unfair	"All airlines have realized that they need to start talking about environmental performance, what we are doing about it. We are in a situation of trying to catch up, and it's never the best situation, because people don't believe what we say, I can even tell you personally, in my own family, I've had a reaction, I've talked about the energy efficiency of our fleet, and well, she didn't believe me! [laughs] I told her, you know I'm not lying, if you don't believe me, how do you think the public will believe me? That's hard, that's really really really hard, because in the imagination of people, it's big engines, burning a lot of fuel, of course it's terrible" (informant #27, airline). "I don't think necessarily that people give the industry credit for the improvements that they've put forward" (informant #2, airport representative).
Normative delegitimation	"Credible governments like the government of the UK, and credible people like the Archbishop of Canterbury are making statements like you know it's evil to travel. [...] There is actually mainstream clergy, I'm not talking about radical people, are making statements like, it's evil to travel, it's wasteful and it's… Again it's an odd notion, given the importance of moving people around today" (informant #2, airport representative). "Earlier it was an exotic industry, 'wow', you know, and now, everybody sees us as people who are polluting and destroying the planet. [...] Especially in Europe [...] that's really worrying. Shocking things" (informant #21, airline representative).
	2nd order theme: Image/Ethos dissonance
Democratization of aviation	"I think aviation has, for a very long time, been seen as the prerogative of a bunch of rich businesspeople or very wealthy people, which doesn't again, does not reflect facts. There is a

	great deal of democratization, if you walk through X Airport, or Y Airport or any other airport in the world, it is not full of rich people, it is not full of businesspeople, it is full of everyday people who travel. And I think, that this is lost on people, this is not frivolous, this is actually essential, and this is not only travel for, you know to go to, the Dominican Republic for a week of vacation, our economies are intimately interlinked with the movement of people and the interaction of people and aviation is a vital part of it" (informant #2, airport representative). "You remember to take an airplane when we were kids for example, it was a big event, wow, one airplane, you know. And now everybody you know, that was, that became very popular, it's not any more just the crème de la crème, that would fly anymore" (informant #13, regulatory agency). "There is this tendency to say, air transportation, luxury transportation, for well-off people, etc. It remains like that. Although it's become mass transportation, clearly. So if it's to transport rich people, they can pay. So we're going to tax them" (informant #31, aircraft manufacturer).
Aviation as underdog	"You know, there is a misconception that the airline industry is making a lot of money. And has a lot of money, because they say oh they're buying 250 million dollar aircrafts or you know. So you get this impression that the aviation industry has a lot of money and that there's a lot of waste… and I mean the travelling public… They see airline captains come out in their Mercedes. And they see the movies of the airline pilots as big playboys or things like that. So there's a misconception in the public that the aviation industry has a lot of money. But if you actually take a look at it financially, over 20 years you probably you know… The saying is how do you make a little money in aviation? You start out with a lot of money [laughs]. So. I mean if you take a look, the trend in aviation is about 3 years in the black and about 5 years in the red, 3 years in the black, 5 years in the red. So overall, if it wasn't for some subsidies, it would be impossible for the airlines to make any money. The public's misconception is that the airlines make a lot of money" (informant #11, regulatory agency). "Now the problem is this, when you get any other area in the trading world, when the banks go down there's a $700 billion bailout, General Motors goes down, we will pay; airlines die, just die, we won't help you. That's the perception that the aviation industry is coming to. You know?

	We are just you know, underdogs, we are not necessary" (informant #17, regulatory agency).
Biased industry image	"There is a great deal of misinformation and misconception out there about the actual contribution that the aviation makes to the problem. Very often I'm asked questions by journalists that have this preamble that goes something like 'well of course aviation is such a major contributor to the problem.' At which point we have to stop and say hold on a second, aviation acknowledges that they contribute to the problem, there's no question that they contribute to the problem. But are you aware that aviation actually represents less than 2% of the problem and here is how we calculate that. [...] You know, so there's all kind of misinformation out there, so part of the [industry communication strategy] has been, hold on a second, we're telling you what we're doing, we're gonna tell you what we're involved in and we're gonna tell you what our industry is doing, but let's start from the right premise, let's start from the right base because you know, you're convicting us, and hanging us summarily before we've even gone to trial" (informant #2, airports representative). "The whole issue of communication, that is, the perception that exists, amongst politicians and the broader public about the environmental credentials of aviation, [...] that perception is totally, not aligned with what we're actually doing. As I always say, it's not enough to be green, *you have to be seen to be green* [emphasis added], because otherwise, you lose a lot of the good will that you should be entitled to in a way [laughs]. I mean that is one aspect that we've been struggling with for many years, we've been putting a lot of efforts trying to educate the public, educate decision makers, politicians, about the things that we do, which is very important, because you can be as green, as sustainable as you want, but if no one knows about it and everyone still thinks that you are that big dirty industry".. (informant #32, airline representative). "- *What would you say are the major difficulties or barriers the industry is encountering in its efforts towards sustainability?* - Ok. Well mainly [...] it's public perception. In the end [...] aviation has done so much more than a lot of other industries in terms of its efficiency historically and that's not being recognized, it's just, all they see is the growth. And it's also the relative contribution. Aviation is a small contributor compared to say vehicle transport or deforestation" (informant #8, airport

representative).

"Priority action is, main thing is to try to convince the audience that we are not the bad guys [laughs], so to have some kind of acceptance from the audience, that ok, you are not on the bad side, but at least we are trying, and we are doing a lot" (informant #28, airline representative).

The uniqueness of aviation. Several informants mentioned that aviation was unlike any other industry: it was simply different. One informant attributed the loyalty of employees toward airlines to this specificity of aviation. He mentioned the fact that many US airlines, facing financial dire straits, had cut all employee wages by up to 15%, and he argued that "people don't stay because of the money. They stay because they like aviation."

But why was aviation perceived as being so unique? Some respondents alluded to some magic of flying, a fascination which cannot be found in any other transport mode. An airline representative explained that "the aero always fascinates people. That's why our brand is the strongest [among other brands in the same holding]" (informant #19, airline). The fascination exerted by aviation was intimately linked to a fascination with the achievements of technology.

Technology sublime. The idea of "technology sublime" was inspired by the work of Vincent Mosco (2004), a sociologist who compared the "digital sublime" created by the spread of the internet during the early 1990s with the similar frenzy that corresponded to the spread of the telephone in the early 20th century. Mosco showed that in both cases, the emergence of a new means of communication resuscitated a quasi mystic belief in Technology as a tool that could annihilate Space and Time. In my interviews I sensed a somewhat similar unrelenting belief in Technology as the solution to the environmental difficulties of the industry.

As already seen in the previous chapter, this theme emerged early on in the investigation, during the observational phase at industry events. For example, the excitement generated by new technologies was particularly palpable on alternative fuels, an area of technological research and innovation that was generating enthusiasm and great hopes.

However, industry observers and NGOs were clearly sceptical of this unrelenting belief in Technology as the answer, and criticized the grandiose visions and hopes of the industry as a form of "wishful thinking". For example, an industry observer from a specialized media stated:

> There is a longer term aspiration by the industry, especially IATA, will say, carbon neutral travel, well, that really depends on things that we don't know what's gonna happen. You know you're talking about alternative fuel sources really, and there's been a lot of heartening and progress on that front, but there are still some big big sticking points that really come into the, how you industrialize alternative fuels, rather than a laboratory exercise in proving that it will actually work. Yes? We know these alternative fuels work. But, when you come down to production issues, creating enough for a global fleet, well that's where the sticking point comes I guess (informant #33, specialized media).

Constant progress. Finally, another facet of the aviation ethos was the unanimous agreement among industry actors, whether they be airlines, airports, or aircraft manufacturers, that the whole industry had constantly been

progressing for years, and that technological progress had been translated into great progress made on environmental issues such as noise and emissions. Informants concurred that there had been fantastic progress, great strides made on each issue. For example, one informant argued that the continuous technological progress and success achieved by aviation only compared with that of information technologies or communication technologies.

As a consequence, industry actors felt very positive about the track record of the industry. It was actually a characteristic of the industry, according to its insiders, that it is in such constant progression and always improving. In many ways, aviation was seen as *incarnating* progress: the whole industry was all about constant improvement, realizing the impossible, pushing the limits.

This self-avowed future orientation is not new: in the annual report of the American Air Travel Association for 1958, the editorial already mentioned that "the airline industry has never had time to look into its past". Still today, industry informants seemed to hold this belief, when they portrayed aviation as being turned toward the future, as representing progress and as being at the forefront of new technological development. Paradoxically, this self association with future and progress was sustained by the omnipresence of aviation pioneers in the collective images of the industry. Thus, based on my field work I would argue that aviation does look into its past, in fact the idealized image of the aviation pioneers is very salient in industry discourse, as noted in chapter 4. More

generally, this nostalgia toward the past appears to be an important characteristic of the aviation ethos[3].

Perception of legitimacy threat

In direct contrast with the strong industry ethos described above, informants reported a striking feeling that their industry was being threatened in its legitimacy.

Aviation is visible. A recurrent theme across interviews was the visibility of aviation, which explained the disproportionate media attention the industry was receiving. Aviation was being singled out as an environmental offender, it was receiving media and public attention, mostly because of its intrinsic prominence and visibility on the societal stage. For example, the disproportionate amount of attention received by aviation was compared to the famous debate on the security of various transport modes: a couple of informants mentioned that although air transport incurred fewer fatalities than automobiles in statistical terms, airplane accidents systematically made the news because of

[3] For example, the element of nostalgia in aviation is evident in the small Canadian airline "Porter Airlines." When visiting their website, we can read the following slogan: "Remember the days when flying was a pleasure? We want to recreate that feeling on each and every flight." Porter Airlines has "stewardesses" instead of "flight attendants." The airline explicitly tries to recreate the feeling of the old era, the golden age of aviation.

their symbolic impact. The environmental impact of air transport was assumed to suffer from the same bias.

Unfair Treatment. Correlated with the theme of visibility was the belief that the public didn't appreciate the benefits of the industry, and its environmental efforts. Industry informants complained: "I don't think necessarily that people give the industry credit for the improvements that they've put forward" (informant #2, airport representative). One airline environmental manager even mentioned the effect of this public disbelief at a personal level: he explained how members of his own family would not believe him when he said his airline was doing its best to limit its environmental footprint. In sum, this theme expressed the perception of informants that their industry was not valued the way it should, and that it was receiving unfair treatment.

Normative delegitimation. The perceived unfairness toward aviation went beyond mere factual disagreement. Several industry actors felt that their industry was being devalued, that it was receiving negative normative value judgments from some sections of society. In other words, it was being delegitimized by some normative authorities. Industry actors felt this depreciation on a very personal level: Statements that "flying is evil" made by religious authorities in the UK, being seen as "people polluting and destroying the planet" were mentioned as being particularly shocking and disturbing on a personal level.

Image/ethos dissonance

As a result of the discrepancy between a positive industry ethos and a legitimacy threat, industry insiders experienced a dissonance. I am using the term of dissonance as defined in classic work in social psychology (Festinger, 1957), to describe a discrepancy between deeply held beliefs and specific events, information, or observation, which creates a "psychological discomfort." The image they received from the public and the media conflicted with what they believed their industry was truly about, i.e. with the industry ethos described above. In other words, respondents felt that the general public and the media still retained an outdated image of the industry, at odds with the reality of air transport. The theme of image/ethos dissonance was expressed very clearly through various themes, which are detailed below.

The democratization of aviation. First, industry insiders mentioned that the public often didn't recognize the social contributions of aviation to society. They attributed this neglect to a wrong perception of what air travel had become: people still kept the old image of air travel as a luxury service, for businessmen and rich people. But this image was conflicting with the belief among industry actors that in reality aviation had become democratized, for common people, for the masses.

This theme of the democratization of aviation was linked to the social contribution of the industry: industry informants argued that by making flight

accessible to a larger population and through constant technological progress, aviation had inserted itself into the fabric of our society, and had become an irreplaceable part of it. But according to many industry actors, the public did not understand or grasp this important social dimension of the industry, something that defines its role in society. Thus, the publicly held image of air travel as a luxury industry was conflicting with the belief among industry respondents that aviation had become democratized.

Aviation as underdog. A correlate of the democratization of aviation was the fact that the industry had been impoverished, and that it was economically fragile. Several informants mentioned this gap between the image of the industry as rich and opulent, a cash cow, and the present reality of the industry as poor, a mass transport which is today closer to the "bus service" and "cattle transport" than the wealthy industry that it used to be. This characterization of a gap between the public image of aviation and its economic reality was mentioned in different forms by most of my informants. Both themes of *democratization* and *aviation as underdog* were linked: because aviation still retained this false image of wealthy industry, it was heavily taxed – the "cash cow" argument became an in-vivo theme emerging from the data.

Biased Industry Image. The lack of public recognition of the social and economic reality of aviation was widespread among industry actors. They

believed that the public had a biased understanding of the real environmental impact and of the reality of aviation in general.

Most industry informants mentioned this negative public image of the industry as one of the major challenges the industry was facing, which required specific communication strategies. In other words, in their view the issue was not only the environmental impact per se, but also - perhaps mostly - the public perception of that impact. Specific actions were directed at influencing and 'correcting' the public perception.

In sum, many industry actors felt what could be called an “identity threat” in the form of image/ethos dissonance and legitimacy threat. This threat prompted a process of naturalization which is described next.

5.2. The Concept Naturalization Process

Thus, the concept of sustainability was interpreted and enacted in the light of a perceived dissonance between the image of the industry, as reflected by the general media and the public, and an aviation ethos which condenses some core elements of what aviation is about. But how concretely did this interpretation function? What were some underlying mechanisms through which the concept was modified and transformed in the aviation field? The following section addresses this question by examining in more details the process of concept naturalization.

A key theme recurrent among interviews consisted in negating the novelty of the concept of sustainability, and framing it as something natural, "something we've been doing all the time." This recurrent and multi-dimensional theme led to developing the central theoretical construct of this chapter, what I have called the *concept naturalization process*, which seemed to be a necessary condition for adoption. Naturalizing the concept of sustainability proceeded in a number of ways. Next, I describe in more details 3 distinct mechanisms underlying or supporting naturalization, that were identified inductively: *relabeling*, *bundling*, and *zooming out*, which are represented schematically in Figure 5.4. Through each of those mechanisms, older concepts and practices were being recast in a new light under the banner of the new concept of sustainability. Table 5.2 presents representative quotations from the data for each of those 3 mechanisms of naturalization, which are discussed in more detail below.

Figure 5.4: Three Mechanisms of Naturalization

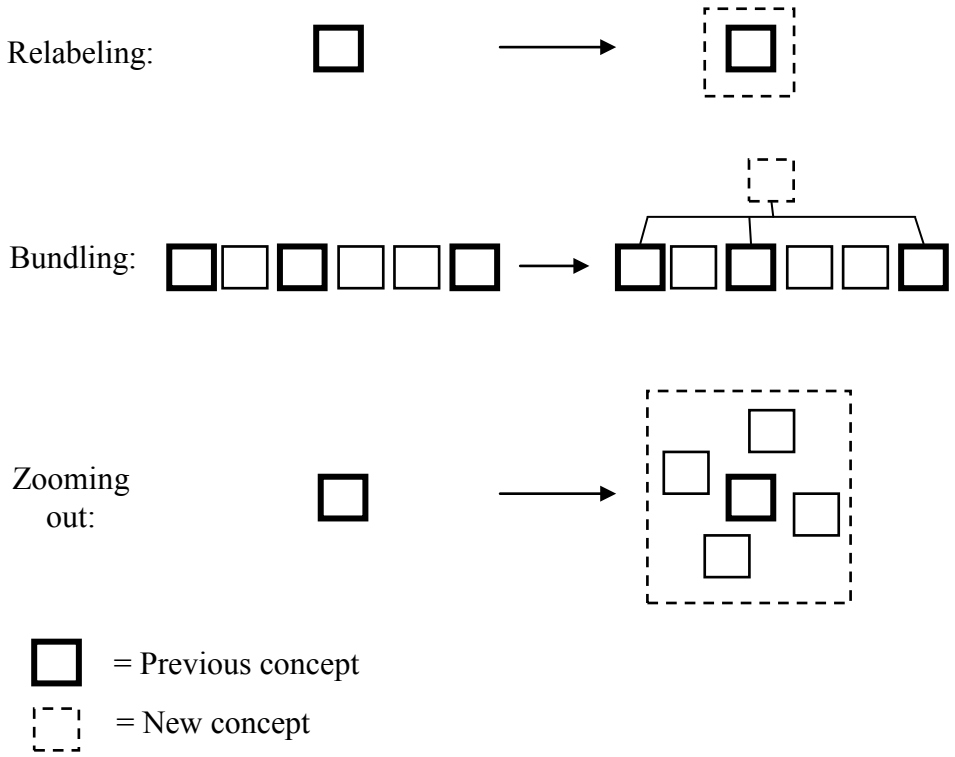


Table 5.2: Representative Quotations: Three Mechanisms of Naturalization

Theme	Representative Quotations
	2nd order theme: Mechanisms of naturalization
Relabeling	"I think for especially the first couple of years, things that were ongoing within airlines anyway, were simply relabeled as being sustainable or sustainability, I mean, because airlines have always looked after both local and global environmental issues, and they have always known that they make both, sort of economic and social contributions to society so, they know those 3 elements, the concept of sustainability have always been there, but I think, it's taken a lot longer for airlines to start promoting their activities in the field of sustainability with sustainability reporting" (informant #32, airline trade association). "There's plenty of environmental initiatives that have been done for many years. And they're related. They fall under the umbrella of sustainability but they were around before sustainability was developed as a concept." (informant #8, airport representative). "If we are talking about sustainable development, the integrated concept, that is environment, social and economic, in an integrated way, we started this in 2007. However, all the environmental part, which for us let's say is a big portion of the sustainability part, that has existed in the different sites for years, because there were national laws that demanded it" (informant #31, aircraft manufacturer). "Now they say continuous descent approach [a flight procedure to limit fuel consumption]. I have flown continuous descent approach eighteen years! […] From a pilot point of view, we have been environmentally friendly all the time! (laughs)" (informant #28, airline pilot). "I think everything we did has highly contributed to sustainability" (informant # 13, regulatory agency) "Aviation is such an evolving world, so I think everything with it works toward sustainability, you know, we have reinvented our equipment, you know, we really have an amazing record coming in (informant # 13, regulatory agency) "I mean, because airlines have always looked after both local and global environmental issues, and they have always known that they make both, sort of economic and social contributions to

	society, so […] the concept of sustainability has always been there, but I think, it's taken a lot longer for airlines to start promoting their activities in the field of sustainability with sustainability reporting (informant #32, trade association)
Bundling	"Before, there were elements that had been put in place in different divisions of [our airline], but not under the banner of sustainable development, or of corporate social responsibility. It was done individually by the different divisions, but now we're trying to regroup all that under the same banner" (informant #27, airline rep). "I think it gives some unity and it allows to have a more global reflexion, indeed on things that used to be somewhat disseminated, we look at them at a more general level and we see what more can be done in each of those directions" (informant #29, airline rep). "Today we are beginning to do this in an integrated manner, but it's not done yet. The social aspects are essentially managed by the HR. We speak much more to HR than we used to, but HR are not fully integrated in our approach, so we're not yet doing sustainable development in the purist sense of the term, let's say, but we're going in that direction. Of course the economic part of it is always taken into account, without any problem, because if we run out of business we do nothing environmental and social" (informant #31, aircraft manufacturer). "Sustainability is more than just the environment, it's also being good corporate citizens, so you need to have a program that covers basic human rights, the right to have unions that sort of thing, and what we have done is to support the UN global compact, 10 principles of the UN global compact, you need to look into your workforce to have an HSE (health, safety and environment) program, etc..." (informant #4, airline rep).
Zooming out	"It's a really really integrated process, you have to look at everything [...]. In order to fly economically, you have to depart in time, then you're on to the turnaround process, you're on to the technical morning readiness of the aircraft fleets, and you quickly start to see that in fact it involves entire operations, how you plan it, how you execute it, what you do when something doesn't turn out the way it should, like a bad weather situation, how concretely do you handle that, and where do you divert your aircraft" (informant #4, airline representative).

"So I think we have to be more holistic in the views. And I think that's been part of the problem, people look at these things without, sometimes from too close a perspective, and they have to back off a bit, I think that's a concern I have. [...] So if there is something that I guess concerns me is that if, that we lose that holistic sort of view, and in fact end up shooting ourselves in the foot, solving one problem but to the significant detriment of the other. I don't think that's the way it's headed but I'm afraid that might be the way it's construed" (informant #2, airport representative).

"First you have to see lifecycle, you have to see amount of waste, you have to see amount of land use, infrastructure, direct cost, indirect costs, the taxes being paid, etc. When you put all that together then you can compare. So saying that aviation is so polluting, excuse me? We use a very little area on the ground, don't tell me that it's less polluting to take all those trees to put a road or a rail or, so there is a lot of consideration of the lifecycle, of the infrastructure, you know there's a lot of things that they don't have this really environmental approach to it, and I think if we want to get to a place where, you know it's better in the incoming years, we have to stop to piecemeal things and say, oh it's the aircraft, no it's the entire activity. This guy since he left his house, he has to go to the airport, which is far away, the train would be closer, with if you take the train, all the trees, the lanes use and electricity and this and that etc etc, plus waste, plus this, and how much is in the airplane, and compare everything altogether. If you do that, how much, how long do you use the train, how long do you use the aircraft, where do you dispose the train, how do you dispose the aircraft, you know, the entire circle, and make a very fair comparison, then we would start talking, and of course I have no doubt that roads would go down the ladder big time, because there's nothing less efficient than using individual cars you know" (informant #13, regulatory agency).

Relabeling. Sustainability as a concept did not arrive on a tabula rasa: the concept did not create an entirely new area of activity. Quite the contrary, the concept of sustainability spread within organizations by subsuming pre-existing areas of activity, and the first mechanism was a simple relabeling of pre-existing issues or actions. This relabeling mechanism was probably the clearest form of naturalization: relabeling an action or a program implies that "we've been doing this all the time".

According to industry informants, most of the large airlines and industry manufacturers had environmental units and programs before they started "sustainability" programs. In other words, practices that are today specifically labeled as 'green' or 'sustainable', such as flight procedures that are more fuel efficient, were presented as things that were done anyway for efficiency reasons, but just weren't labeled as 'sustainable'. One pilot explained that relabeling implied sticking a new name on old practices: "Now they say continuous descent approach [a flight procedure to limit fuel consumption]. I have flown continuous descent approach eighteen years!" He concluded that "from a pilot point of view, we have been environmentally friendly all the time! (laughs)" (informant #28, airline pilot). In sum, in this first mechanism, relabeling, the concept of sustainability was used to recast pre-existing initiatives or programs in a new light.

Bundling. A second mechanism of diffusion, which I have called bundling, consisted in connecting functional areas that were previously

unrelated. Indeed, one particularity of sustainability as a concept seems to be its capacity to be attached to a wide diversity of actions. The concept thus has this property that it can be used as an umbrella encompassing various otherwise unrelated themes. This second mechanism functioned together with the first mechanism of relabeling: the concept of sustainable development or sustainability redefined and regrouped pre-existing activities that used to be labeled as "environmental action". The value added of the concept of sustainability was its capacity to give unity to those issues, to provide a global picture.

But the bundling mechanisms did not only regroup previous environmental actions. Other areas of action became bundled under the umbrella of sustainability too. Nearly all informants in industry firms mentioned that the concept of sustainability cut across operational and administrative divisions. The most frequently mentioned aspect was the connection between operations or manufacturing and HR departments. A number of specific human resources issues were mentioned as being recast under the general "sustainability" banner. An airline representative mentioned for example the number of handicapped persons employed by the firm, or gender equality issues, as themes now piloted and managed under a sustainability program. This mechanism of bundling thus led to a large diversity of actions becoming part of a sustainability program.

Zooming out. A third mechanism of concept diffusion and evolution was zooming out: taking a larger perspective, stepping back, taking a holistic

perspective on previous situations. So for example a governmental representative mentioned that the concept of sustainability had led to a larger discussion on the sources of ground pollution and appropriate solutions: according to him, a good portion of the local pollution around airport was not caused by airplanes, but rather by inadequate local transportation systems serving the airport: "They've got a thousand taxis a day that go back and forth to the airport, which are causing as much pollution as the airplanes taking off" (informant #11, government). Another government official explained that a "fair comparison" between transport modes required zooming out and taking a larger perspective on the issue: "First you have to see lifecycle, you have to see amount of waste, you have to see amount of land use, infrastructure, direct cost, indirect costs, the taxes being paid, etc. When you put all that together then you can compare."

The naturalization process

Taken together, the three mechanisms detailed above contributed to a process of *naturalization*. Sustainability was presented as something that was there previously, but just not named or formalized. For example, like Mr. Jourdain in Moliere's play who is amazed at realizing that he had been talking in prose all those years without knowing it, many industry actors noted that the constant progress on fuel efficiency achieved by the industry had in fact, all along, been a way of "pursuing sustainability." In the illustrative quote that opened this chapter, an environmental manager in a regulatory body stated that "aviation is such an evolving world, so I think everything with it works towards

sustainability, you know, we have reinvented our equipment, you know, we really have an amazing record coming in [...]. Everything we did has highly contributed to sustainability" (informant #13, regulatory body).

The naturalizing of sustainability represents a process by which the new concept was reinterpreted in terms of existing *values* or professional *norms* in the industry. For example, a pilot explained that fuel-efficient procedures were done earlier because they were characteristics of "good piloting" and "professionalism": "I think from the beginning, we thought that the pro way to do things, is that you are mentally focused, on the task, and being mentally focused on the task means that you don't, for example take extra fuel" (informant #28, airline pilot).

Another respondent in a North-European airline explained that early environmental protection actions were natural, and part of a cultural norm in his country. Asked how people considered environmental protection in the mid 1990s, he said: "I can't really say that it made a hell of a lot of a difference at the time, it was more seen as, well of course, it was sort of natural, there was no specific reaction to it, there was no even specific public uptake of it. It was just one of those things that [North-European] companies sort of should do" (informant #4, airline representative).

The naturalization of green practices was most evident in the recasting of fuel-efficiency initiatives as green actions. But a similar dynamic could also be observed in other areas, such as recycling. An airline pilot explained how recycling wasn't such a novel concept after all:

> I was just talking with my mum and dad about recycling, and they said what, we are experts in recycling, because they are the war time children! When it was the 2nd world war, everything was lacking, you didn't have the wealth that you have now, they recycled everything back then! [laughs] So now we have gone in the bad direction. They didn't waste anything in that time. They have been all the time aware of what they waste, because it wasn't like this. So we are making a circle and coming back to the original situation. So recycling is not a new thing. For our generation maybe (informant #28, airline representative).

5.3. Outcomes of Naturalization

The interpretive process of naturalization described above had three interrelated outcomes: naturalizing sustainability resulted in (a) creating a resonance between the naturalized concept and the industry ethos; (b) modifying the concept of sustainability, or corrupting it in subtle ways; and (c) reaffirming and redefining the industry ethos.

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Table 5.3: Representative Quotations: Outcomes of Naturalization.

Theme	Representative Quotations
	2nd order theme: Concept/Ethos resonance
Ambitious goals	"And [working on alternative fuels] will be, you know, setting a benchmark, setting a new technology, having a goal, everybody's very excited with that. Let's see how it's going to happen. And that for the future is a big vision." (informant #13, regulatory agency). "He said how do we in 50 years, how do we fly airplanes that don't pollute anything? It may be absolutely impossible, […] but it's audacious and it's at least setting a bar […] He should have cited, I don't think he did, he should have cited John Kennedy in 1960, when he said between now and the end of this decade we're going to put a man on the moon. Everybody looked at him as if he was already on the moon. In 1969 on the 20th of July they put a man on the moon. You know, for me it's very easy to not succeed, you don't set a goal, you know it's very easy. But if you want to try something, if you want to be audacious, set a goal up there, set something that's important, the worst you can do is improve dramatically over where you're at today" (informant #2, airport representative). "It is very ambitious, but if you just trod out there you're never going to point yourself in that direction" (informant #10, regulatory agency).
Incremental steps	"[sustainability is] little things that add up. […] We're doing things always thinking every time we do something, how can we do it a little bit better. None of them are big and dramatic; that's the way you win these things. You don't win them by big dramatic things, you got to win them by doing little bits every time" (informant #2, airport). "We have to work on efficiency, more efficient airplanes, full of people, to save money on taxi time, APU, other things… there are many things that are going to be done, small things but added added added" (informant #7, airline) "[We've been working on fuel efficiency] one thing at a time, step by step... [...] we worked for 6 months, and then slowly we started to implement initiatives, one at a time. It started with water on board, the volume of water you take on board, it goes from the weight of blankets to earphones, we even changed the containers for those" (informant #19, airline).

	"There is just, I nearly called it minor incremental improvements that you can do between each aircraft generation. Because aviation is really really really technology dependent." (informant #4, airline).
Long term action	"We have an industry that has long life cycles, so an aircraft that is defined today will stay around for a long time […] Between the moment we start thinking of an aircraft, we start on the drawing board, […] until the moment when the last aircraft from this series will leave service, it can take 60, 70 years (informant #31, aircraft manufacturer). "Greenhouse gases have become the flavor of the month sort of, approach, and […] it has allowed some people the luxury of saying, 'we don't have to worry about [noise and other older issues] anymore, this is a higher priority' (informant #2, airport representative)
	2nd order theme: Concept corruption
Appropriation	"I think that for many years environment was seen as something isolated. You did it because you didn't comply with the air quality rules or you got noise complaints. But within a sustainability model, environmental managers in an airport can argue that we need this environmental program because it's related to the business plan of the airport. [...] It's integral with operations and with planning and another one might be energy management in a building where if the building is designed, if you spend more money on the building so it's better, it's more efficient on environment power usage then that model pays for itself. Then the extra money you spend is recouped in saving of power bills. So it's the whole... that's all under the bank of sustainability where operations meets environment meets planning" (informant #8, airport rep) "People are finding that within a sustainability umbrella, [...] environmental people can push their agenda on operations and on planning because it's the bigger picture and that you get concepts like whole of life costs - life cycle costs. [...] Environmental managers are getting their voice heard by management which is you know, running the whole thing because of the sustainability concept. And it's sort of a foot in the door too, that the environment is now offering a better economic model" (informant #8, airport rep).
Dilution	"At the moment I'm looking at everything from recycling paper at your office desk to fuel initiative programs, and technical things, events like this, hearings, it's really becoming a wide area."

	(informant #4, airline rep). "I'm actually compiling a document which is going to be called policies of recommended practices and so it's going to have four sections: one on noise, local air quality and climate change. And the fourth is actually sustainability. It's a bit of a jumble because I've got you know, water quality, soil, all those ones I've just mentioned, and I'm just shoving them under sustainability because I mean... noise and... I mean it all overlaps. It could all have been called sustainability but it's just the way we've written it. [...] We've got all these other sort of issues" (informant #8, airport rep). "I think it started out as environmental actions being labeled as sustainability and I think over time sustainability has come to include many more things than just environment, today, it has more to do with, basically with everything almost, because it's economic and social so it's very difficult to find things that you could not include under the heading of sustainability, it's from health and safety issues on the work floor, and to gender policies, human resource and recruiting activities, wider developmental issues, third world issues... It's become a much more overarching concept" (informant #32, airline rep).
Deviation	"I would say that sometimes this term (sustainable development) is used to avoid talking specifically about environment, but to evoke the debate on aviation growth and the constraints linked to this growth, meaning the issue of capacity, whether that be airport capacity or air traffic control capacities, or whether that be environmental or ecological constraints" (informant #24, Government representative). "Really, everyone seems to look at their own product offering and kind of selling it as being a solution. So [firm X], [...] you know their newer planes are obviously far more fuel efficient, so it's a way to sell new products into the market, that type of thing. Usually companies, you know, they go where their strengths are. What kind of fits with sustainability (informant #25, industry supplier). "You know honestly I'm partially an engineer and a scientist by training and for me, I sort of gave up on the idea of sustainability a while back. I prefer talking about concrete terms, about emissions or... because it seems like too slippery of a concept for me, so. You will find in the

	environmental community there is a post sustainability crowd. They don't like the word, yeah so [...] I mean sustainability is very important. I mean if you, for biofuels, I was talking about emissions, but there's a huge broader issue of water use and local air pollution and economic development that need to be a part of the discussion but it's not in my training to talk effectively about that so I talk very specifically about emissions" (informant #30, NGO representative).

Concept/Ethos Resonance

The process of naturalization was a way to reduce the dissonance described earlier between the ethos of great achievements and technological cutting edge and the devalued image mirrored by the public and general media. As the concept of sustainability was naturalized, its novelty negated, it gained resonance by becoming harmonized with core industry values forming the industry ethos. It appeared that the high level of technological sophistication of the system of air transport, and the constant, incremental progress of systems, naturally lead to a framing of sustainability as the paradoxical mix of ambitious goals to be attained by incremental actions.

Ambitious goals. The theme of *ambitious goals* was recurrent in airlines interviews. There was some element of nostalgia in this idea, nostalgia for great challenges and accomplishments, for the grandiose saga of aviation, to reclaim the soul of the industry. For example, an airport representative mentioned the inspiring and ambitious challenge of "zero carbon aircraft for 2050" that the secretary general of IATA had set to the industry a few months back, and drew a parallel with the inspiring call for space conquest made by President Kennedy in 1960.

Incremental steps. Yet a surprising corollary of the *ambitious goals* theme was that progress would be incremental rather than revolutionary: it

proceeded small steps at a time. An airline representative talked about "not one silver bullet, but a silver buckshot". Another one mentioned that sustainability meant “little steps, but added added added.” All of this was highly resonant with a core belief mentioned above that aviation had always been about constant, continuous progress: the answer to sustainability was simply to continue on this trend.

Long term action. One major justification for this incremental form of progress was, according to informants, the high technology-content of any sort of innovation in this industry, and the delays inherent in any new technology testing and approval. Furthermore, the long life cycle of aircrafts was another built-in factor constraining any quick fix, and favouring longer term approaches to sustainability.

As a consequence, some industry actors were seeing the whole discussion about sustainability as a kind of fad, in which some issues, such as green house gases emissions, were brought to the front of the scene as the "flavour of the month" issue, at the expense of other long standing issues such as noise. Understandably, airports people were the most outspoken on this theme, since they are on the front line regarding noise complaints. However, other industry actors similarly criticized the “flavour of the month” tendency on other grounds: because of the long life cycle of aircrafts, because of the incremental form of technological progress in aviation, new strategic orientations engaged technological choices that would stay around a long time. Letting any type of

media-fueled hype around a specific environmental problem influence long-term technological choices was thus viewed as a mistake.

Concept corruption

Another consequence of the naturalization process was the subtle modification of the concept of sustainability – or concept *corruption*[4] (Lozeau et al., 2002). Three specific forms of concept corruption emerged from the data, which are directly linked to the three mechanisms of naturalization exposed above.

Concept appropriation. One consequence of the mechanisms of relabeling was that the concept of sustainability was used to push pre-existing agendas within the organization.

In a first instance, relabeling can be seen, at a superficial level, simply as a form of "green washing:" a cynical adoption of the concept in purely symbolic ways, without any real change in behavior. However, it is important to note that the relabeling of pre-existing projects also presented a great opportunity to promote positive change. Environmental managers in airlines underlined that the relabeling gave them the opportunity to push more on the environmental side, by recasting existing programs as "environmentally friendly", which gave them

[4] It is important to note that the term *corruption*, is used here not in its common acceptation to denote intentional misconstruction, but rather to denote unintentional deviation, as seen from the specific point of view of observers external to the industry.

more leverage to influence things. Environmental managers at airports and airlines alike mentioned that this expanding perimeter of sustainability had provided an opportunity for them to push some actions within their organization. For example, one airline environmental manager mentioned that the emergence of sustainability as a marketing tool used by airlines had made it easier for environmental managers to sell their projects internally: it provided an external justification for projects that earlier were simply viewed as consuming scarce resources.

So the relabeling was often promoted actively by environmental managers, who found in this mechanism an opportunity to sell and promote their initiatives internally, thereby altering the priority of actions within the organization. This observation shows that even a simple relabeling of pre-existing activities can have some unexpected consequences. Even if the adoption of a sustainability discourse was initiated within an organization for purely symbolic reasons, it ended up tilting the internal priority of issues in favor of those programs that could be favorably relabeled under the new umbrella concept.

Concept dilution. A consequence of the mechanism of bundling was the ever expanding scope of what falls under the banner of 'sustainability.' As a result, environmental or sustainability managers had to deal with an ever increasing number of issues. One airline environmental manager lamented his lack of time to "go into things in more details" by explaining that "at the moment

I'm looking at everything from recycling paper at your office desk to fuel initiative programs, and technical things, events like this, hearings, it's really becoming a wide area" (informant #4, airline rep).

By virtue of being an umbrella concept, sustainability thus appeared to become what one could call a "stick all" concept: like the usual "miscellaneous" category, it could be used to host many disparate things that do not neatly fit under any large organizational theme. For instance, an airport environmental manager avowed reserving the term “sustainable development” for all the various issues that did not fit nicely into the well-established categories of his environmental report.

So the concept of sustainability was convenient because it permitted to hold many issues of very different nature under a single headline. But sustainability thus became much more difficult to define, as it encompassed a wide diversity of issues and actions. Ironically, as one airline environmental specialist put it, anything could become related to sustainability: the concept ran the risk of being diluted.

Concept deviation. A consequence of the zooming out mechanism was that the debate shifted to a discussion of boundaries: what were the proper terms of a calculation, what should be included, those questions arose as a consequence of “zooming out” on the environmental impact of aviation. Of course, the meaning of “sustainability” becomes dependent on the scope of the perspective taken.

Thus, some informants noted that concept deviation or high-jacking was a serious issue threatening the concept of "sustainability". One informant argued that "various interest groups have tried to hijack the concept for their own purposes..." (informant #32, airlines rep). One notable occurrence was that sustainability became understood and associated with *growth*: being sustainable meant 'meeting the demand', protecting the industry growth. For example, when asked what was needed for the industry to become sustainable, an airport environmental manager answered:

> I see it as being able to meet the demand. So whether that's from providing, keep providing more services or whether it's a combination of that or an eventual slowdown in increase in demand...So just noise management; if you don't manage your noise, you're not going to be able to expand which is not sustainable (informant #8, airport rep)

This confounding of sustainability with *sustaining growth* was noted sarcastically by some industry observers, such as NGOs and governmental representatives. Partially for this reason, some NGO representatives were reticent in even using the term "sustainability".

In sum, the concept of sustainability or sustainable development was not diffusing untouched in the aviation industry. Instead, the concept was being redefined as it diffused, and was becoming enshrined into another debate: how growth can be maintained, while mitigating the environmental impact of the

industry. The fuzziness surrounding the term of sustainability even lead to its abandonment by some environmentalists and NGOs.

5.4. Synthesis and Implications

Any new concept needs to be interpreted before it can be implemented and disseminated. This chapter has shown that the concept of sustainability went through a process of naturalization which led to its reinterpretation though the lens of a set of implicit beliefs about "what aviation is about," or what I have called the aviation ethos. In this section I draw some initial theoretical implications from the findings reported in this chapter, which will make the building blocks for a more general theoretical discussion presented in chapter 8. Three theoretical implications discussed below are (a) the contribution of the process of naturalization to theories of concept diffusion; (b) the role of industry ethos in the diffusion process; and (c) the loose coupling between concepts and practices.

Naturalization as an interpretive process underlying diffusion

This chapter contributes to current theories of diffusion by shedding light on the interpretive mechanisms through which management concepts are adopted within industries. Focusing on the meaning-construction activities linked to the adoption of the concept of sustainability led us to describe a process of *naturalization*, manifested in three distinct mechanisms (relabeling, bundling, zooming out) through which pre-existing issues and practices are being

reconfigured under a new concept. The word naturalization has been used by previous researchers interested in discursive and cultural aspects of mergers and acquisitions. For example, Vaara and Tienari (2002) describe the processes of justification, legitimization and naturalization at work in the general and specialized media during three important mergers in Finland. But unlike those authors who use the term simply as a synonym for increased legitimacy of merger activity, the present study proposes to understand naturalization as a key process linking the interpretation of management practices with identity-building processes occurring at the level of the field.

The construct of *naturalization* can be distinguished from the related construct of *translation* because the former draws attention to the identity-building dimension of the process, which the latter ignores. While the translation perspective highlights the editing work through which a management concept is being actively adopted, this perspective emphasizes the adaptation side of the story, and neglects the role of interpretive work to redefine the "terrain" on which the diffusing item is being transferred. As our literature review previously discussed, the translation perspective is well equipped to describe change and adaptation, but does not provide a basis to understand any form of permanence. In contrast, as explained in this chapter, *naturalizing* implies an intertwined process of reinterpretation in the light of existing values and norms prevalent in the industry, through which (a) the diffusing concept is being naturalized; and (b) the industry ethos is being affirmed and redefined.

This double movement is critical. The naturalization process affects both the diffusing item and the institutional context within which it diffuses. Maybe using a metaphor from the realm of nationalities and citizenship attribution processes can best illustrate this point. Naturalizing a foreign individual into a given nationality means simultaneously reaffirming and redefining the nature of this nationality.

Industry Ethos and concept diffusion

Identity building processes have received a great amount of scholarly attention at the organizational levels of analysis. When defined at that level, identity is often defined as that which is central, distinctive, and enduring about an organization (Corley & Gioia, 2004; Gioia & Thomas, 1996). Subsequent research has shown that organizational identity may be less stable than initially thought, and that identity coevolves with organizational image in complex ways. Dutton and Dukerich (1991) described a process of coevolution in which shifts in industry image (defined as the image that organizational members receive of their organization through contacts with external audiences) sparked a questioning and ultimately a redefinition of organizational identity (defined as that which defines the organization). Subsequent research has explored the role of image and identity in strategic change (Gioia & Thomas, 1996) and in organizational member identification (Dutton et al., 1994).

But the processes through which identities are constructed and maintained at higher levels of analysis – such as industries or professions – has

received less attention. Only a few studies have attempted explicitly to investigate the powerful effect that professional and industry cultures can have on organizational-level behavior. For example, Phillips (1994) compared and contrasted the cultural mindsets of various actors in fine arts museums and wine makers, and she identified key differences along a number of theoretical dimensions. Spender and colleagues (Grinyer & Spender, 1979; Spender, 1989) showed how industry recipes – taken for granted solutions or lenses to analyse problems – powerfully determine the range of options considered within a given industry.

The concept of industry ethos advanced in this chapter extends this line of research and transposes the concept of organizational identity at higher levels of analysis. Closer investigation of identity dynamics occurring at the field level is critical to understand how concepts and practices diffuse in industries and organizational fields. For example, students of organizational reputation and impression management have shown how a sense of professional identity orients the interpretation of judgments received from external audiences (Elsbach, 1994). Dukerich and Carter (2000) cited the interview of the CEO of Smith & Wesson, the gun manufacturing company, who recalled in a New Yorker interview:

> When I came to Smith & Wesson, there was virtually none of the stigma that you encounter today. The industry was a proud industry. We were in the mode of believing that we were doing things that were very important

> for preserving security and freedom and law and order and those kinds of things (Boyer 1999, cited in Dukerich & Carter 2000, p 97).

A striking parallel can be drawn between the above quote and the one that opened Chapter 4, which I collected at an industry event. In both cases, industry insiders perceived a dramatic erosion of legitimacy of their whole industry. Dukerich and Carter, like most other authors who have studied reputational crises, focus on reputation at the organizational level of analysis. However, in the case studied here, reputation erosion and legitimacy threat happened not at the level of specific organizations, but rather at the aggregate industry level.

Although the construct of industry identity has received little focused empirical attention, a large number of studies working within the institutional analysis tradition have relied on higher level identification mechanisms to explain organizational- or inter-organizational level behaviour. For example, collective identification processes have been shown to play an important role in the diffusion of new organizational forms (Carroll & Swaminathan, 2000; Haveman & Rao, 1997). Organizational theorists have posited the existence of *institutional logics* positioned at the level of institutional fields to explain broad shifts in market configurations (Thornton & Ocasio, 2008). In the definition used by Thorton and Ocasio (2008: 101), institutional logics are "the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence,

organize time and space, and provide meaning to their social reality." This broad definition which includes "the structural, normative, and symbolic" dimensions of institutions allows the authors to apply the construct of *institutional logic* to a large variety of empirical phenomenon described in organization studies. But this theoretical inclusiveness is also a weakness, since it merges processes that are conceptually quite distinct, such as collective identities and identification, status and power, or classification and categorization. The construct of *industry ethos* developed in this chapter is more conceptually focused, in that it specifically relates to the identity-building dynamics emerging within institutional fields.

Another limitation of current conceptualizations of institutional logics is a persisting under-specification of the underlying mechanisms through which logics operate. While identity-building dynamics are often hypothesized as playing a role in the reproduction of institutional logics, how exactly collective identities are reproduced remains unclear. Thus, a second contribution of this chapter has been to specify the interpretive mechanisms through which an industry ethos gets reproduced and affirmed. The three mechanisms exposed previously (relabeling, bundling, zooming out) provide much needed theoretical nuance and precision on our understanding of the process of institutional logic reproduction.

The loose coupling between practices, issues, and concepts

Finally, the findings reported in this chapter highlight the loose coupling between practices and concepts. The naturalizing of sustainability through fuel

efficient procedures described in this chapter is of course not surprising, given that such practices have been implemented in the industry for many years and thus have been part of the available repertoire of practices for a long time. This shows that the diffusion of management concepts and the diffusion of management practices are two different things, and are governed by different mechanisms of diffusion. While common understanding assumes that new management concepts are "attached" to practices and that one flows together with the other, what we observe in this study is different. Practices that are now labeled as "green" or "sustainable" have existed for a long time in the industry, but the novelty is that those practices are now formalized, sometimes relabeled, systematically pursued, and bundled under the new management concept. In other words, practices are only loosely coupled with concepts.

An interesting paradox is that this naturalizing mechanism is sometimes observed alongside mentions of the proverbial "resistance to change". Three airline representatives mentioned both the difficulty of imparting change and selling the message across the organization, and the fact that many initiatives and programs were already underway early on. For example, one airline pilot mentioned that "as a firm, we had no choice, there was an important turn to take, there's a transition that is really complex, it's a change of lifestyle;" yet later in the interview this informant explained how green practices had started several years earlier as fuel efficiency programs, and were later recast as part of a larger sustainability effort. In other words, pushing a new management concept means, on the one hand, affirming the change component: that airlines are slow to

change, that the mentality of pilots needs to evolve - thus emphasizing the resistance to change. Yet on the other hand, pushing a new management concept requires building ties to existing practices, and negating the newness of the concept. The same informants who lamented the resistance to change of their organizations also mentioned that in many ways becoming "sustainable" was mainly a communication change, that the underlying activities had always been to save fuel and thus that they were green all the time. In sum, the naturalizing or reinterpretation of new practices through preexisting programs and actions seemed like a necessary step for the appropriation of the new management concept within the organization.

Deephouse (1999) proposed a theory of strategic balance at the organizational level, arguing that in order to forge their identity, firms need to appear as distinct as possible from other competitor firms, yet remain similar enough to their peers so as to maintain legitimacy. The findings reported here lead to extend Deephouse's theory of strategic balance to the diffusion of management concepts and practices: in order to be acceptable to organizational audiences, new management ideas need to appear sufficiently coherent with pre-existing practices yet attractive and distinct. The naturalization process allows this strategic balance between legitimacy and distinctiveness to be maintained.

On the basis of an ethnographic account of industry events (chapter 4) and focused interviews of industry actors (chapter 5), we have explored the interpretive dynamics through which a new management concept – sustainability

– is diffusing within the aviation industry. Because both chapters provided a snapshot perspective on the phenomenon of interest, they only told part of the story. The next two chapters expand the scope of the study in two ways: first, and most importantly, they take a longitudinal perspective on concept diffusion. Second, they broaden the scope of the investigation and retrace how environmental issues in general (as opposed to one specific concept of sustainability) have been discussed and framed over the last decade in this industry.

Chapter 6. ISSUE EVOLUTION AND FIELD STRUCTURE

"We now have to deal with the three issues at the same time, noise, local air quality, and global climate. Before that, we were a little bit piecemealed, I would say. [...] It's very different if you deal with noise, local air quality, and global climate, and when you deal with everything together plus, you know, the economics; it's not that we haven't looked in a sustainable way to noise, local air quality and global climate, but when you put all together then it's a new ballgame."

Informant #13, regulatory agency.

We have seen that the new concept of sustainability was interpreted and *naturalized* through the rearrangement of pre-existing issues and practices. In order to fully understand this process though, a longitudinal perspective would be required, to observe long-term evolution and shifts in the way issues are reconfigured under a new concept. This chapter starts to provide a longitudinal perspective. It is based on the qualitative data collected through individual interviews. The chapter begins by describing the recent rise of the environment as new industry priority. It then shows how two major environmental issues or problems – noise and emissions - have evolved radically over the last few years, and how those issues are socially constructed rather than defined objectively. Finally, the chapter argues that the transformation of issues resulted in a

profound change in the structure of contention in this organizational field, which in turn impacts the diffusion of the concept of sustainability.

Although the concept of institutional field has been widely adopted by organizational theorists since its introduction by DiMaggio and Powell (1983), it remains disputed and subject to diverging interpretations. In their original statement, DiMaggio and Powell (1983: 148) defined an organizational field as "those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products." Yet this definition proves to be difficult to operationalize empirically. Where should one draw the boundaries of an organizational field? Building on a longitudinal study of environmentalism in the chemical industry over a period of three decades, Hoffman (1999: 352) contends that "a field is not formed around common technologies or common industries, but around issues that bring together various field constituents with disparate purposes." As a consequence, "issues define what the field is" (p352). But how do *multiple* issues define an organizational field, if those issues are located at different levels, involve different actors, and evolve along diverging trajectories? The chapter examines this question by adopting an issue-centered perspective on sustainability in the field of civil aviation. An issue-centered perspective asks what the specific issues or problems are in the industry, how each issue is being defined or specified, which actors or stakeholders are concerned by each issue, and what types of relationships link those actors around each specific issue. Such a perspective

differs from a more traditional view on organizational fields in which the relationships between actors is considered overall, often through the lens of one particular type of organizational actor, whether they be business firms, NGOs, government, or any other stakeholder. Thus, unlike previous studies focusing on the activities of a specific organizational actor to structure a field, this chapter examines how specific environmental issues are framed and conceptualized by different actors, how their relative salience evolved over the last decade, and what the consequences of those shifts are for the structure of the organizational field of aviation.

6.1. The Environment as New Industry Priority

Environmental issues are not new in aviation. Noise has been a longstanding environmental issue and a source of contestation from environmental groups all over the world. However the debate on the environmental impact of aviation has reached unprecedented proportions recently, and this debate has largely been fuelled by an on-going discussion about the contribution of the industry to climate change.

The ebb and flow of industry priorities

Interviewees from the aviation industry mentioned that the environment had joined safety and security as a top industry priority over the course of the last couple of years. A more systematic tracking of the frequency of those concepts in a trade publication confirms this general trend. As Figure 6.1 shows, while

safety dominated the other two concepts in industry discourse over most of the 1990s, security took precedence in the wake of the terrorist attacks of 9/11 (Figure 6.1 counts articles of the trade publication Aviation Daily that contain the keyword in their full text for the given year). The environment has been gaining momentum over the last two years, and now its salience as a topic of discourse in specialized media is comparable to the other priorities of security and safety.

Figure 6.1: Shifting Industry Priorities

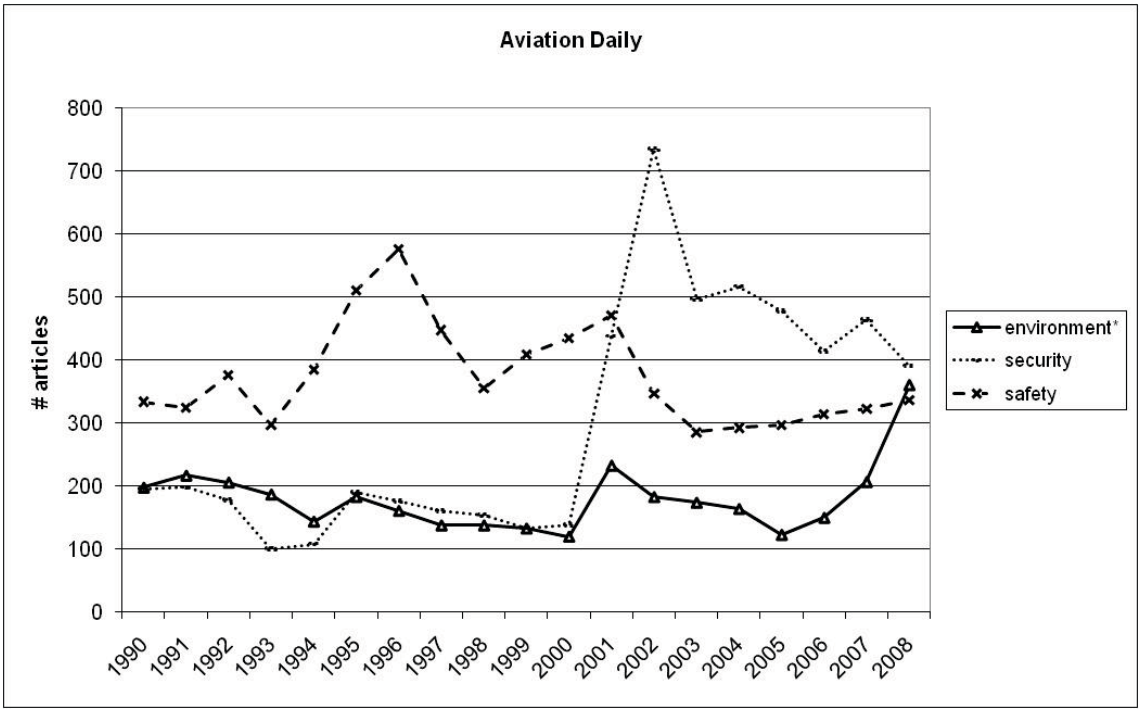


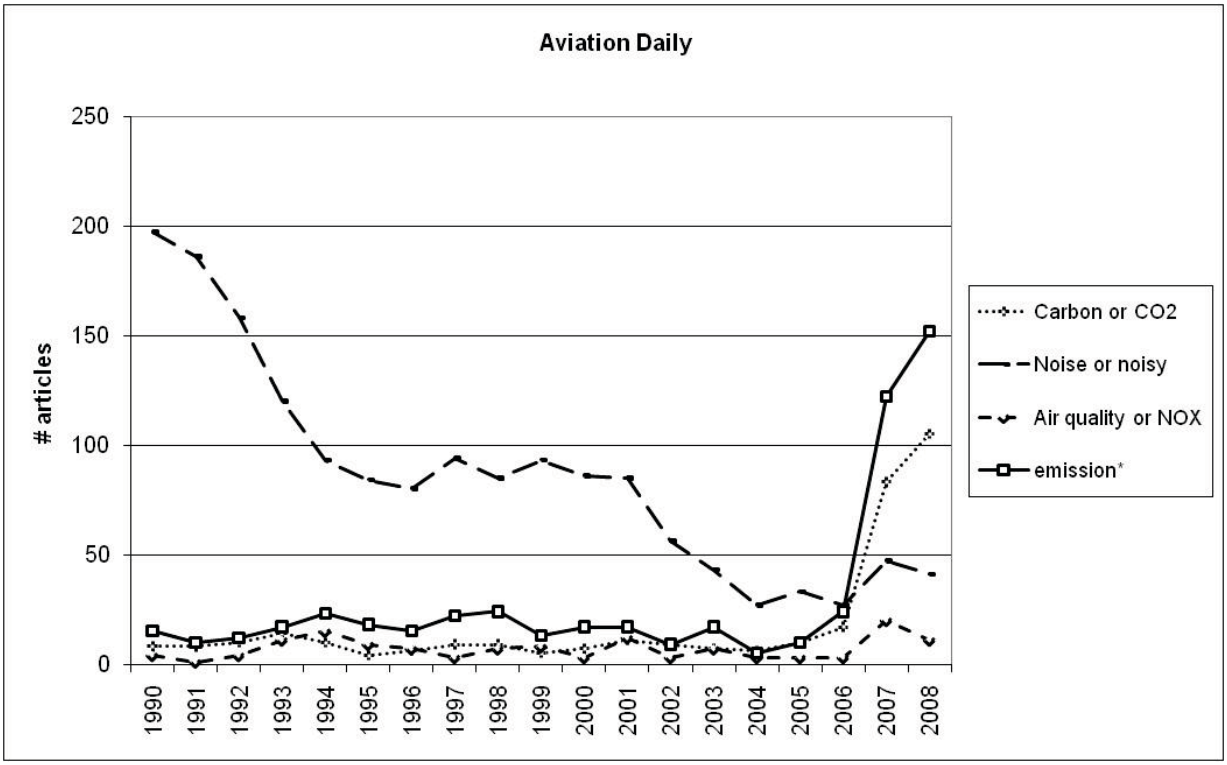
Figure 6.1 shows a pattern of ebb and flow of industry priorities, in which specific priorities gain prevalence in waves or surges, and occupy the front of the scene for some time. But what explains the recent rise of the

environment as new industry priority? A closer look at the various environmental issues mentioned indicates that this turn in industry priorities coincides with the rise of climate change as a societal preoccupation. Aviation entered the climate change debate through a growing concern over the impact of aircraft gases emissions, an issue which has evolved significantly over a short time span.

The rise of "emissions" as new dominating issue

What actors in the aviation industry refer to as "emissions" is a complex environmental issue, which has only become prevalent in recent years. Figure 6.2 shows that while noise used to be the most salient environmental issue appearing in industry discourse over the last two decades, its relative importance has continuously declined. The keyword "emissions" has gained its new position as the dominating issue in a strikingly short time, over the last two years. (Figure 6.2 counts articles of the trade publication Aviation Daily that mention specific environmental issues in their full text for the given year). Taken together, Figures 6.1 and 6.2 indicate that the issue of "emissions" largely explains the recent rise of "environment" as an industry priority.

Figure 6.2: The Rise of "Emissions" as a New Environmental Issue



Furthermore, comments from respondents indicated that the meaning of the word "emission" had changed over the last decade. While during the 1990s emissions referred principally to local NOX gases around airports and global CO2 gases, in the late 2000s emissions covered both the local and global effects of NOX, the global production of CO2, and a whole range of other "non-CO2" gases that are believed to contribute to the greenhouse warming effect, including water vapour in the form of condensation trails left by aircraft in the upper atmosphere.

6.2. Social Construction of the Environmental Impact of Aviation

Measurement Issues

Industry actors and environmentalists strongly disagree on the *scale* of environmental issues, and on the proper way to capture it. Thus, issue quantification – a crucial part of the collective construction of issues - becomes in itself a major source of debate. The first issue that generated that type of debate was noise. Informants indicated that how to measure noise had been a question for debate for many years, within regulatory agencies as well as in each individual airport. A few standard procedures had emerged, but by and large noise remained an issue whose significance was the result of a *local* process of social construction, resulting from the mixing of various local factors including geography, climate, and social traditions. The complexity of noise measurement and its embeddedness in local realities is well illustrated by the following quote:

> A lot of debate has been going on about [noise measurement] in the past, but in [airport X], they have agreed on one particular measure. There is one method to calculate the noise for the noise contours. That is all based on the traffic levels, the kind of aircraft type being used, which runway is used. And with a lot of parameters my colleagues can make that kind of calculation for the noise contours for, let's say, one year of traffic. And the noise contour indicates the noise exposure in the vicinity of the airport. Now, after that, of course, […] if the weather changes very much,

> due to El Nino or another phenomenon, there is a possibility that a certain runway combination will be used more than they had anticipated, also more than they had planned in the noise contour. The actual noise contour after a particular year can be different from the one that is planned (Interview #12, service provider).

In sum, even when one particular system is in place, when agreements and trade-offs are made with local residents, the real runway usage may fluctuate, resulting in a different noise distribution around the airport. The source of noise is not stable, it evolves all the time, and ways of assessing noise evolve in parallel. This informant continued:

> They are now - actually just recently, like one month ago - they proposed a new way to make those kinds of measurements.[…] The main argument for changing the system is that, when you look at the noise contour that is created with the current system, it's quite inflexible. You have a lot of assumptions about runway use, aircraft types, the weather… And so because of all those operational effects you may have, you may end up with another noise contour at the end of the year. And every year there is a huge debate about it, because the people who live in the vicinity, they feel double-crossed; they feel cheated. Because the agreement is you have to stay within the contours, but they exceed the contours and it is allowed (Interview #12, service provider).

The complexity of measuring and managing noise is illustrative of an important process in the social construction of reality, namely what sociologist have called *commensuration*: "the transformation of different qualities into a common metric" (Espeland & Stevens, 1998: 314). The transformation of "aviation noise" into a metric, and ultimately into a policy, is a difficult process that does not simply rely on the scientific development of a measuring procedure. Rather, it is a socially mediated process, in which local actors around airports (such as associations of neighbours or local governments) have an important role to play. It is also a process in constant evolution: even though noise issues have existed for decades, new measurement procedures are being developed and negotiated locally around many airports. Which actors are involved in this process of collective definition will have an important impact on the subsequent meaning of a given environmental issue.

A similar collective process of commensuration can be observed around the newer issue of aircraft emissions, but with important differences, which help us understand why this new issue is transforming the organizational field. First, the issue of emissions being relatively new, there is to date no scientific certainty on the impact of various aviation-produced gases on the global climate. One important controversy focuses on the role of condensation trails left by aircrafts in the upper atmosphere. Those contrails are mostly water vapour, yet they are believed to significantly impact the greenhouse warming effect. Some NGOs

estimate that the CO2 contribution of aviation to global warming should be multiplied by a factor 5 or even 10, to account for the warming effect of non-CO2 gases.

Second, beyond the purely scientific agreement on the significance of those emissions, there is a great deal of debate on how to *account* for the emissions and attribute them to an offender, as the following quote illustrates:

> Now in terms of emissions, that is a much looser discussion, simply because it is pretty hard to measure how much emissions you left when you flew at 40,000 feet above my country, never having landed. […] For example, a certain percentage of traffic, air traffic, in Canada never lands at a Canadian airport, they overfly Canada, so they go from New York to Copenhagen over Nova Scotia and Newfoundland, and in theory they were polluting at higher than acceptable level our air quality in Canada. How the heck are we going to track that? So what you find is that the issue of noxious gases and so on, this is something that's extremely difficult to regulate simply because of the nature of the offense (interview #5, Researcher).

According to an informant, the difficulty to assess and affect carbon offense explains why aviation was left out of the early Kyoto protocol on climate change:

> When they were negotiating Kyoto […] they came up with the idea of taking aviation and maritime bunker fuels out of the main agreement […]. The reason they did it was not a particularly good one, it was considered to be too difficult because of the fact that you know airplanes fly A to B to C, when a British Airways plane is flying to Saudi Arabia with American passengers, whose emissions are they? Same with maritime... basically too difficult to account for. So they were looking for a way out (interview #15, Consultant).

In sum, not only did we observe variation in the relative salience of environmental issues over time; we also noted that environmental issues are defined through a collective process of commensuration which includes the development of scientific metrics and indicators. The related processes of (a) measuring, and (b) attributing emissions to specific offenders are two components of commensuration, which are still largely unresolved for the new issue of "emissions." We can thus observe that the environmental impact of aviation is not a stable concept or idea. In fact, the environmental impact of aviation is the result of a collective process of social construction. As described previously, a social construction perspective views reality as resulting from the repeated enactment of collective behavior. Environmental issues or problems do not exist in and of themselves, but rather emerge as patterns in recurrent interpretation and behavior. For example, "noise" only becomes an environmental issue when it is seen as such by a set of actors.

In the next section, I turn to describe how the actors involved in this process of reality construction have changed over the last few years, and the consequences for the evolution of the organizational field.

6.3. The Bifocal Structure of Contention in the Field of Aviation

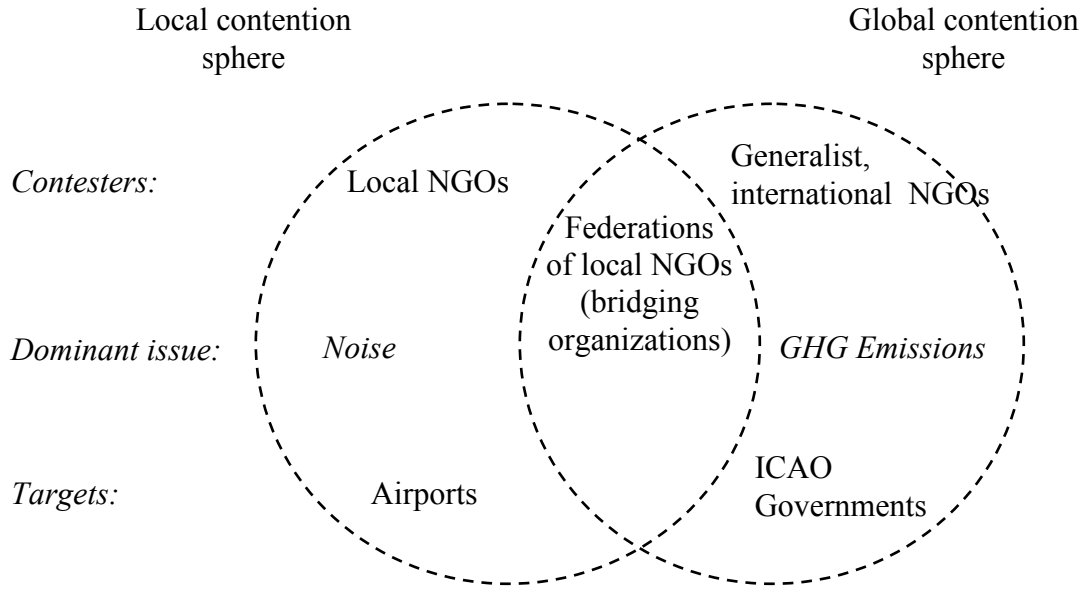
As described previously, while the civil aviation industry is facing a number of environmental issues, two among them have been particularly salient and contested: noise and greenhouse gases (GHG) emissions. Those two issues are very different in nature and exist at different levels. Noise is exclusively a local issue, concentrated around airports, and it is a short term concern; GHG emissions are a global issue, that build up gradually and are more a long-term concern. Interviews with NGO activists and industry actors both showed that the structure of contention around those issues is quite different: noise is primarily contested by local NGOs formed by concerned citizens around airports, while GHG emissions are primarily contested by a limited set of NGOs, including large generalist NGOs like WWF, Sierra Club, or Friends of the Earth, as made evident in this quote:

> I guess, some NGOs would be focused on particular issues, so you know, a German organization might be focused on the Munich airport issue, and most of their concerns and interests have been driven by local issues, whether it was noise, or whether it was a new airport etc. There's been very few players around, you can count them on the fingers of less than

one hand, who've been involved in these wider issues like noise regulations, fuel efficiency, international tax issues, and now international greenhouse issues. Even now with the greenhouse gas issue and the whole bunker issue, there's less than five NGOs who are engaged internationally on the issue. So most of the time, it's been a domestic focus (interview #26, NGO representative).

In other words, each issue constitutes a nexus around which different stakeholders coalesce, thereby constructing a bifocal organizational field, as depicted on Figure 6.3.

Figure 6.3: The Bifocal Structure of Contention in the Organizational Field of Aviation



As can be seen on Figure 5.3, the absent protagonists in this scheme are the airlines, which are surprisingly spared from any direct contention originating from NGOs. The local sphere of contention is centered on airports, which are, in their own words, "on the first line." Contesters in this first sphere are local NGOs or community groups, formed by citizens directly affected by the nuisances linked to the proximity of an airport, i.e. mostly noise, and to a lesser extent local air quality. The global sphere of contention is centered on governments and ICAO, the UN agency for civil aviation. Contesters in this second sphere are mostly large, generalist and international NGOs such as WWF, Friends of the Earth, who have only recently started to be active on aviation issues, with a specific focus on greenhouse gases (GHG) emissions. Very few NGOs span both spheres, and they act as bridging organizations between them. Those are the large federations of local NGOs, such as Aviation Environment Federation in the UK, US Citizens Aviation Watch in the US, or Transport and Environment in Belgium[5]. All of those federations are themselves part of a larger umbrella organization called the International Coalition for Sustainable Aviation, which, according to several NGO informants, is an

[5] There is also a limited number of NGOs that are aviation-specific and deal with both noise and emissions issues, yet are active only on a local level, and favor confrontational, activist-type strategies as opposed to regulatory policy making (examples would include NGOs like "Plane Stupid" in the UK). However, such NGOs are very few and are concentrated in the UK, a country which has witnessed a fierce debate on aviation growth in the last couple of years.

informal organization whose only purpose is to represent a common NGO front at ICAO meetings.

Nested spheres of regulation

The new issue of emissions is also transforming the organizational field by causing a multiplication of the spheres of regulation. Since noise was an aviation-specific issue, it used to be dealt with either at the local level through ad-hoc negotiations around airports, or at the industry level through regulatory negotiation at ICAO. But the new issue of emissions spans a much larger scope, and is not limited to aviation. Because of the numerous levels of jurisdiction crossed by aviation, there are various processes of regulation happening at the same time on emissions, and thus the regulatory sphere is in fact a conjunction of multiple spheres, which are partly nested and partly decoupled. One such regulatory process is driven by ICAO, the UN agency for civil aviation. Another process is the larger climate change negotiation driven at UN level by the UNFCCC[6], a new actor with great strategic importance in aviation. Other processes are happening at inter-governmental levels such as the European Union, which has recently passed a law including aviation into its carbon trading scheme. Other processes still are happening at national levels, such as the local carbon trading schemes developed in Australia or New Zealand.

[6] The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that centralizes negotiations on climate change policy across various countries and sectors.

The multiplicity of parallel regulatory processes has an interesting consequence: it requires the few bridging NGOs to participate in a variety of meetings, working groups and conferences. Those bridging NGOs have developed a practice which I have called "wearing multiple hats:" activists attend various meetings and processes using multiple affiliations, depending on the precise topic of the day. The most illustrative was the following activist, who explained:

> So we'll be going to Montreal […], as [NGO A], to present to [ICAO]. But when I go to Bonn in March to participate in UNFCCC meetings, I'll likely go as [NGO B], probably under a [NGO C] umbrella. Because some of these other NGO umbrellas spend all their time working on climate negotiation, of which the bunkers is only a small part, so it's much better to go in under that sort of an umbrella. […] I know it's a bit complicated but that's just, I've had to learn that's probably the best way to go about doing our business. So you might have different umbrellas for different national organizations and processes. But in the end, you have your little brand name, which is representing civil society. […] I went to Poznan as part of the [NGO D] negotiation you see. I could have gone as part of a shipping delegation, I could have gone as [NGO E]. But I went as [NGO D]. Because it's those federations of NGOs who've been following the climate negotiation for the past 10 years, all aspects of the

climate negotiation, and bunkers is just a very small part of it (Interview #26, NGO representative).

A consequence of this "multiple hats" practice is the fluidity surrounding NGO labels and activists: a few central activists who specialize in aviation wear multiple hats and are part of multiple organizations. The boundaries between various NGOs become fuzzy. Those key individuals arguably play a critical role in the coordination of policies and actions undertaken by the few bridging organizations. Further examination and confirmation of this empirical finding would require a network analysis and is beyond the scope of this study. Yet this observation illustrates the bifocal nature of the organizational field: the spheres of contention are disjointed, and the "multiple hats" practice is a mechanism that allows NGOs to coordinate and span the multiple spheres in which issues get defined and policies get crafted. The issue-centered perspective chosen in this chapter demonstrates that the "field of aviation" only exists at the confluence of multiple spheres of contention and regulation, which are going through phases of reconfiguration.

6.4. Synthesis and Implications

As this chapter has shown, the environmental impact of aviation, far from being a stable or unequivocally identifiable fact, only becomes defined through processes of social construction that exist at various levels of analysis. While the noise impact is defined at a local level, the emissions impact is currently being

defined and discussed at a global level. Both processes involve distinct actors, working at different levels. Furthermore, while noise has been a long standing issue in this industry, it is only recently that the issue of GHG emissions has gained a central position in the debate on the environmental impact of aviation. The present chapter has shown how the appearance of the new issue created a separate field of contention, involving different contesters and targets, and different arenas of regulation, thereby restructuring the organizational field. An issue-centered perspective on aviation elicits the picture of a bi-focal field, with two somewhat separated spheres of contention and regulation, which are joined and connected by a very limited number of bridging organizations.

Building on the interpretation of fields as structured around issues (Hoffman, 1999), the present chapter adopted an issue-centered, as opposed to an actor-centered, perspective on environmentalism in the field of civil aviation. We saw how each issue constituted a nexus around which stakeholders coalesced at different time periods, each time building a distinct argumentative structure of the organizational field. I argued that each issue created a distinct sphere of contention and regulation, forcing industry actors to develop specific strategies to bridge them. One implicit assumption of extant models of field change so far has been that the field is somewhat homogeneous (Lounsbury, 2007). The model most often employed to think about field-level change has been the punctuated change model inspired by the work of Kuhn (1970) in scientific fields. A contention of this thesis is that this model is not adequate to understand institutional change in organizational fields: it is based on an understanding of

fields as somewhat bounded, internally coherent entities, which go through cycles of incremental change or through revolutions in unison. However, organizational fields may not be so uniform. Rather, organizational fields are composed of multiple sub-fields or spheres, which are connected. Previous research has highlighted the limitations of a monolithic conception of "industry" to capture the blurred boundaries and dynamics occurring during change periods (Munir & Phillips, 2002). Recent work in the institutional tradition has emphasized the fragmented nature of organizational fields, and has paid greater attention to the dynamics happening within and between different meaning systems located at local levels (Lounsbury, 2007; Thornton & Ocasio, 2008). The present Chapter builds on this recent line of theorizing by showing that organizational fields are structured around multiple issues coexisting at different levels. Paying attention to issue evolution helps us understand the dynamics of organizational field change. The relative salience of different issues will bring some actors' interests closer, and take others actors' interests apart. Thus, the issue-centered perspective taken by this chapter has shown that the greater salience of environmental management within aviation cannot be simply understood as a progressive and uniform shift of a whole organizational field toward a new concept, but rather as a restructuration of the field around a different issue, which alters the previous internal field relationships.

Finally, the findings described in this chapter lead to rejection of previous conceptions of new issues diffusing within institutional fields as through a stable medium, and instead draw attention to the ways through which fields are

restructured as new issues gain salience, new actors are introduced and existing power relations are altered. This perspective is important to understand the diffusion of management concepts. A management concept is defined to address issues, or problems that are meant to be managed. The concept cannot be defined independently from the issues it is meant to address. Indeed, concept and issues are co-defined through a collective process of reality construction, as shown above. For example, we saw that the issue of "aircraft noise" around an airport is defined through iterative negotiation between operating companies and neighboring communities. The methods of quantifying an "aircraft noise" issue are periodically being revised, leading to a renewed definition of the issue for each locality. The issue of "aircraft emissions" provided another example: it is only recently that water vapour produced by aircrafts in the upper atmosphere has begun to be considered an environmental issue. Thus the meaning and definition of "aircraft emissions" has evolved significantly, as a result of a collective process of definition involving airlines, scientists, and the media.

While this process of social construction of environmental issues is of course not new, this Chapter has shown that the level at which issues are being contested and defined has changed significantly for aviation during the last decade. While a concept of "sustainable aviation" in the early 2000s meant addressing mostly local noise issues, in the late 2000s it meant predominantly addressing global emissions issues. Furthermore, the actors involved in the collective definition of those issues were not the same in each time period. Studying the career of a management concept thus requires close examination of

how the issues that the concept addresses may have evolved over time, and how this evolution is related to the evolution of the concept itself. The following chapter takes on this task through a systematic, longitudinal investigation.

Chapter 7. CYCLES OF DIFFUSION

Previous chapters of this dissertation have established that (a) new management concepts are naturalized through an active process of interpretation, in which pre-existing issues and practices are reshuffled in a novel way; (b) a management concept cannot be defined independently from the issues or problems that it is meant to address. Both the concept and the issues are co-defined through a process of collective reality construction.

But how exactly issue (problem) evolution is linked to concept (solution) evolution remains unclear. This chapter examines how conceptions of environmental action have evolved in aviation over the last decade, by using the conceptual tool of framing theory developed by social movement scholars. This approach relies on the theoretical argument that various sets of actions or programs can be reliably linked to a limited set of underlying cultural frames (Benford & Snow, 2000; Hoffman, 2001b). As explained in the literature review, social movement scholars define *collective action frames* as "action-oriented sets of beliefs and meanings that inspire and legitimate the activities and campaigns of a social movement organization" (Benford & Snow, 2000: 614). Collective action frames are the product of a continuous and active process of *framing*, which consists in reality interpretation at a collective level. A frame orients and justifies action by providing: (a) a diagnostic, or a definition of what the problem is; and (b) a prognostic, or an identification of some possible solutions to solve

this issue. I used the concept of *frame* as a way to compare and contrast how different actors in aviation have conceptualized environmental management, and have justified action on environmental protection. It is important to note, on a theoretical basis, that frames – unlike institutional logics – are not mutually exclusive. Some frames may be contradictory, while others may be complementary. Each actor may use different frames conjointly at some point. Therefore, the purpose of the analysis is to capture *the pattern of frame usage* over time, and to build theory on the links between issue evolution and frame evolution.

7.1. Methods of the Archival Study

The study applies structured content analysis, a method that has been used previously by a number of researchers in strategy and organization theory (e.g., Chen & Macmillan, 1992; Fiss & Hirsch, 2005; Hoffman, 1999; Miller & Chen, 1994; Pollock & Rindova, 2003). In recent years, there have been more studies using archival and media data to analyze institutional change (Ventresca & Mohr, 2002). Content analysis methods have been employed to assess how the volume and tone of media coverage may influence investor's evaluations of initial public offerings (Pollock & Rindova, 2003), or to track changes in patterns of word use and word association over time (Bartunek & Spreitzer, 2006; Ghaziani & Ventresca, 2005; Ocasio & Joseph, 2005). In this chapter, archival data collected at the level of the industry was analyzed using content-analysis procedures to explore concept evolution.

Data sources and sampling

The industry trade publication *Aviation Daily* was used to track evolution in the framing of environmental actions over time in the civil aviation industry. Hoffman (2001a) mentions that trade journals are an invaluable source of data for researchers, because of the role they play in the institutionalization process: "First, they act as a common source of information, aiding in the normalization of industry perspectives. Second, they act as a historical record of the key actors, the activity undertaken, the motivations behind this activity, and the events that initiated that action" (p227). In other words, trade publications not only reflect how industry actors understand and frame environmental issues, they also contribute to shaping this understanding, and they are therefore an adequate source of data to observe evolution in the industry conceptions and frames.

The trade publication Aviation Daily has been used by other researchers in strategy for its detailed coverage of the airlines industry (Chen & Macmillan, 1992; Miller & Chen, 1994). Chen & MacMillan (1992: 551) describe Aviation Daily as the "industry mouthpiece intended to report objectively airlines' announcements and actions." Furthermore, personal communication with various experts in aviation as well as an interview with the senior editor of an aviation specialized media all confirmed the prominent role of Aviation Daily as an authoritative source of information on actions, announcements and events happening in the global aviation industry. Finally, Aviation Daily articles are most often short, focusing on one specific event or action rather than on

comprehensive reviews or analyses, thereby allowing for reliable coding. Because of the very large number of articles published by Aviation Daily, I used the online database Dow Jones Factiva to identify articles related to environmental issues.

Initial sampling strategy

An initial exploratory article count allowed me to gain a first understanding of trends in the evolution of issues over time. Figure 6.2 in chapter 6 depicted a simple count of articles mentioning a specific environmental issue (noise, CO2, NOX…) in their full text for each given year. It showed that a shift in the prominence of environmental issues occurred over a few years, as noise, once the predominant issue was being replaced by carbon emissions. This preliminary analysis was used to determine the appropriate timeframe for the study. I decided to focus on the years 2000 to 2008 in order to capture fully the switch in industry priorities. Comments collected during my interviews also indicated that most of the change in the nature and scope of the environmental debate on aviation had occurred during the years 2000-2008.

In order to retrieve relevant articles from the online database, I defined a list of keywords, using a thesaurus to generate semantically related words around sustainability and environmental issues. The search was limited to the headline and first paragraph because my goal was to capture only articles that were mainly and explicitly about environmental issues. In the end I searched for articles containing any of the following keywords in their headline or first

paragraph: environmental*, sustainab*, nois*, emission*, pollut*, green*, carbon*, or dioxide. This yielded 1224 articles published between January 1st 2000 and December 31st 2008.

Level of coding

Choosing the appropriate level of analysis for coding is an important first step in content analysis (Krippendorff, 1980). Researchers have used the level of individual articles, paragraphs or phrases, or single words as levels of analysis. For example, Hoffman (1999) chose to code at the level of each article published in a trade publication by coding each headline or title. Other researchers have analyzed media articles by counting the number of statements found in each articles and then computing an aggregate measure at the level of the article. For example, Pollock and Rindova (2003) analyzed the media coverage of IPO firms by counting the number of positive, negative or neutral appraisals of each firm in a given article, then averaging this measure to determine whether each article was positive, negative or neutral. Fiss and Hirsch (2005) also used a composite measure of article valence using a similar methodology. Other researchers in organizational studies have used content analysis at the level of individual words. For example, Jones and Livne-Tarandach (2008) have focused on keywords to distinguish three underlying logics of business, profession and state, in the rhetorical strategies of architects.

In the present study, focusing on the level of individual article was appropriate, because Aviation Daily articles report tactical information as

opposed to syntheses or comments, and are very concise and homogeneous in their content. Those characteristics of Aviation Daily thus allowed for a reliable coding at the level of the article.

Human versus computerized coding

While computerized coding is systematic and avoids fatigue and other human bias, it is not exempt from systematic biases; a commonly noted limitation of computerized coding is the potential validity issue (Sonpar & Golden-Biddle, 2008): specific keywords may be used with a different meaning, depending on the context surrounding them, and computer programs often fail to detect such variation. Although innovative approaches to measuring meaning have been developed in recent years (Jones & Livne-Tarandach, 2008; Mohr, 1998; Weber, 2005), computerized coding is still limited when it comes to coding complex constructs such as frames. In this study, both the high level of complexity of the various frames and the reasonable number of articles to code made manual coding the appropriate method. I followed the 3 protocols suggested by Sonpar and Golden-Biddle (2008) to increase scientific robustness of a manual content analysis: (a) identify variables of interest based on prior research then extensive qualitative study; (b) create a codebook for content analysis; (c) inter-rater reliability procedure.

Identification of the cultural frames

Based on the qualitative interviews with industry actors, I defined a set of frames characterizing different ways of justifying organizational action on environmental issues. I took as a starting point the set of six frames proposed by Hoffman (2001b), who posited that environmental protection was being conveyed to organizations either as operational efficiency, as risk management, as capital acquisition, as market demand, as strategic direction, or as human resource management. Using the interview data collected for the first part of this investigation, I inductively modified and expanded the list of cultural frames initially proposed by Hoffman, thus leading to a list that was tailored to the specificities of the aviation industry in the time period considered. I performed a validity check by submitting the description of the frames to an industry informant and asking for feedback, as did Bansal (2005). This process led to the definition of eight frames, used by aviation actors[7] to justify environmental management, which are identified in Table 7.1 along with their defining characteristics.

[7] Actors which are external to the industry (e.g., NGOs, local community groups, the general public, financial institutions, etc…) may have a number of additional frames beyond the eight listed here. The goal of this study was to capture the frames used by industry actors only, as expressed in a trade publication.

Codebook elaboration

As Sonpar and Golden-Biddle (2008) have suggested, a crucial component to guarantee the reliability of a content analysis is the preparation of a codebook. When the codebook is adequately designed, coding becomes a simple and "mundane activity", leaving as little space for interpretation (and thus bias) as possible.

The detailed codebook was first drafted by building on previous related studies. Drawing mainly on Hoffman's (1999) content analysis of trade publication in the US chemical industry, and on Bansal's (2005) content analysis of annual sustainability reports in the Canadian pulp and paper and mining industries, I started by creating a potential list of actions and actors. This list was then modified and extended based on the interview data collected. The experience gained through participation in industry events and in-depth interviews with industry actors proved essential to construct this initial working codebook. Finally, the codebook was amended or extended throughout the actual coding of articles, whenever a new actor or type of action appeared. In the end the codebook contained 11 actors, 7 issues, and the 8 frames described previously. The 11 actors were: NGO / local community group, airline, trade associations, airport, ICAO/UN, National state / politician, specialized governmental agency, industry group or coalition, engine or aircraft manufacturers, industry supplier/consultant, external actors (including general public, scientists, financial institution, investors, insurance company). The 7 issues were: noise, carbon emissions, NOX emissions, water pollution, local air

quality, other type of pollution, or environment at large. The 8 frames are listed in Table 7.1, with examples of actions. Individual articles were coded for a given cultural frame using mentions of diagnosis or prognosis. For example, when an airline executive lamented the lack of financial capacity of airlines to invest in sustainability projects due to heavy taxes (diagnosis), it was taken as an indication of the cultural frame "economic burden." When the development of new airframe designs or alternative fuels was recommended (prognosis), it was taken as an indication of the use of the cultural frame "Technological Innovation."

Each article was coded based on the title and first paragraph. Out of the initial sample of 1224 articles retrieved, 704 were rejected, mostly because they were false hits (for example, they used the words "sustainable" or "green" in a context unrelated to the environment). Articles were also eliminated whenever the environment was a peripheral topic, as opposed to the central topic of the article. 520 articles remained after this first step and were coded individually. Whenever the topic wasn't simple or involved multiple actors, I read the whole article to ensure accurate coding. Following Hoffman (1999), I coded each article for only one actor and one frame. When multiple actors were involved I followed Hoffman's guideline and coded for the actor initiating the action. For example, if the article mentioned an airline criticizing a new governmental regulatory program I would code the actor as airline and the frame as economic burden. Similarly, each article was coded for one dominant environmental issue.

When no specific issue was mentioned, or when the article dealt with multiple issues in an equal manner, the issue was coded as “environment at large”.

A random subset of 50 articles was coded by a research assistant who was given the codebook described above. The rates of coding agreement were 0.73 for frames, 0.86 for actors, and 0.80 for issues.

Table 7.1: Environmental Management Frames.

Frame	**Examples of Diagnosis**	**Examples of Prognosis**
Operational Efficiency	- Inefficient aircraft operation causes both additional cost and increased pollution - Environmental protection contributes to airlines' financial health	- Fuel efficiency measures (operational) - Engine cleaning - Load factor improvement - Programs to increase operational efficiency
Systemic Efficiency	- Lack of coordination among industry actors - Systemic inefficiencies of global aviation	- Optimization of flight routes - Air traffic management improvement - Optimized flight procedures (CDA, etc…)
Technological Innovation	- Lack of technological alternative to jet fuel or jet engines - Inefficient airframe design	- New engine technology - New airframe design - Technological research and development
Risk Management	- Environmental issues represent new risks for the industry / organization	- Hedging for financial costs (e.g., hedge risk of carbon market by buying permissions) - Hedging for liability costs - Environmental risk assessment of new projects
Image Management	- There is a growing public demand for greener travel - The public overestimates aviation's environmental impact - Media has a 'flavor of the month' approach toward aviation	- Public image management and Firm Marketing - Public Relations - Visibility-enhancing actions like onboard recycling or carbon offsetting. - Global marketing campaigns for aviation
Regulatory Compliance	- Inadequate regulation at the international level	- Propose new regulatory policy - Enforcement of regulations - Legal action
Social Responsibility	- The global institutions governing aviation are slow and bureaucratic - Coordinated initiatives are more effective than regulation	- Voluntary programs or initiatives by industry actors, beyond existing regulation.

Economic Burden	- Lack of financial resources of airlines to invest in sustainability projects - Environmental management consumes scarce resources and is costly	- Oppose taxes on aviation - Criticize financial effects of heavy regulation - Industry lobbying, influence

Data analysis

The coded data were first analyzed by drawing simple timelines for each actor, environmental issue, and frame. This provided a sense of the overall salience of each environmental issue within the industry, and of the prominence of each different actor and frame.

Then, I computed two composite measures to synthesize the change in terms of framing over the course of the period studied: *Frame diversity* was defined as the total number of frames found for each environmental issue in a given year. This measure thus parallels the richness of symbolic imagery used by Zilber (2006). *Frame diffusion* was defined as the total number of actors using each frame for a given year. Finally, *Issue intensity* was defined as the number of articles dealing with each environmental issue in a given year.

The goal of the next phase of data analysis was to understand which actors were using which frames, and to capture changes in frame use over time. Thus, the data was organized in the form of a three-dimensional matrix (actors x frames x year). I used multidimensional scaling (MDS) to formally measure to what extent different actors were using similar frames. MDS has been used previously in sociology to study social organizational structure, and more

recently to study cultural meaning structures (Mohr, 1998). MDS is an iterative procedure that approximates any measure of similarity between variables from a matrix into a Euclidian distance, allowing graphical representation of the data in a 2 (or 3) dimensional space. It is important to note that the dimensions identified iteratively by the algorithm do not have any theoretical or empirical signification in and of themselves, and therefore they cannot serve as a basis for analysis. However, the relative distance between each variable, or their grouping can serve as a basis to identify visual clusters of "similar" variables (Borgatti, Everett, & Freeman, 2002). The quality of the approximation computed by the algorithm to transform the input matrix into Euclidian distances is assessed by a stress function (Kruskal Stress), which values are generally considered acceptable if they remain below 0.2 (Borgatti et al., 2002).

I started by computing a matrix of similarities among the set of actors in terms of their use of frames for each given year, by counting the co-occurrences of actors and frames in each article. I then used MDS to compare graphically the relative proximity of different types of actors in terms of their use of each frame. In order to achieve acceptable measures of stress, I reduced the number of actors by collapsing them into larger categories in an iterative way, each time based on theoretical grounds. For example, NGOs and local community groups were clustered in one group; national states and specialized governmental agencies were clustered in one group; finally, scientists, financial institutions, investors, insurance companies, and general public were all collapsed into a group called

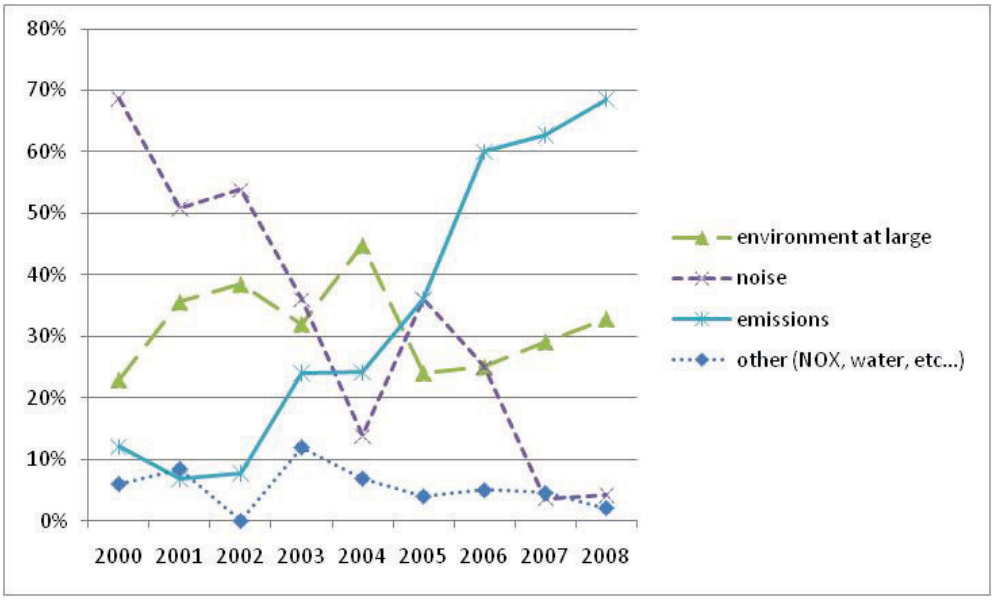
"external actors". The relatively low number of articles concerned and the common status of those actors as external to the industry justified this clustering.

7.2. Results

First order results: aggregate analyses

Figure 7.1 presents at an aggregate level the relative prevalence of each environmental issue over the time period studied, expressed as a percentage of all the issues covered in a given year.

Figure 7.1: Issue Prevalence



Based on the profile of issue salience over time displayed on Figure 7.1, I identified 3 major phases in the time period studied: phase 1 (2000, 2001, 2002)

was characterized by a clear predominance of noise, while emissions and other issues were only marginally present. Phase 2 (2003, 2004, 2005) was characterized by a growing salience of emissions as an environmental issue, while the salience of noise had diminished. Phase 3 (2006, 2007, 2008) was characterized by a clear predominance of emissions, and a further decrease in the salience of noise.

Figure 7.2 presents in a synthesized way the relationship between frame diversity, frame diffusion, and issue intensity, for each of the three phases identified above. First, we observe that when one specific issue becomes salient (e.g., noise in phase 1, or emissions in phase 3), it migrates toward the top right corner of the graph. This indicates that frame diversity, frame diffusion, and issue intensity appear to be positively correlated, which suggests that issue intensity is driven by the diffusion of multiple frames across various actors. In other words, frames do not appear to compete with one another, in the sense that one dominant frame does not crowd other frames out[8]. Rather, frames seem to benefit from a "mutuality effect:" during periods of issue salience, frames multiply.

We also observe that the salience of "environment" as an umbrella issue closely follows the salience of more specific environmental issues like noise in

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[8] However, frames can conflict with each other in the sense that they imply diverging – and sometimes opposing - diagnosis and prognosis. But the findings reported here suggest that frames are not located within a zero-sum space. Frames may even benefit from the salience of directly opposed frames.

phase 1, or emissions in phase 3. In phase 2, a period marked by a low salience of both noise and emissions, we observe that "environment" follows this low profile pattern. All this suggests that the umbrella issue of "environment" only becomes salient in conjunction with more specific environmental issues which take the front stage. We thus witness active periods during which specific issues drive the prevalence of a more general concept, separated by a "quieter" period of ferment, during which multiple issues coexist but none dominates.

Actor Prominence

Figure 7.3 represents in condensed form which category of actors was most active around each issue. The diagram displays the number of articles involving each category of actors. For example, if a line remains close to the center of the plot, it indicates that this category of actor was not very prominent during the phase considered - few articles mentioned those actors. However if a line approaches the periphery of the plot, it indicates that this category of actor occupied a prominent position in industry discourse, as measured by the number of articles in the trade publication. The guidelines given to interpret Figure 7.3 should also be used to interpret Figures 7.4 and 7.6.

Thus, Figure 7.3 shows that the actors most prominent during phase 1 around the noise issue were (1) national states, and (2) specialized governmental agencies, trade associations, and airports. In contrast, actors most prominent during phase 3 around the emissions issue were (1) national states and airlines, (2) trade associations, and (3) specialized governmental agencies.

Frame usage

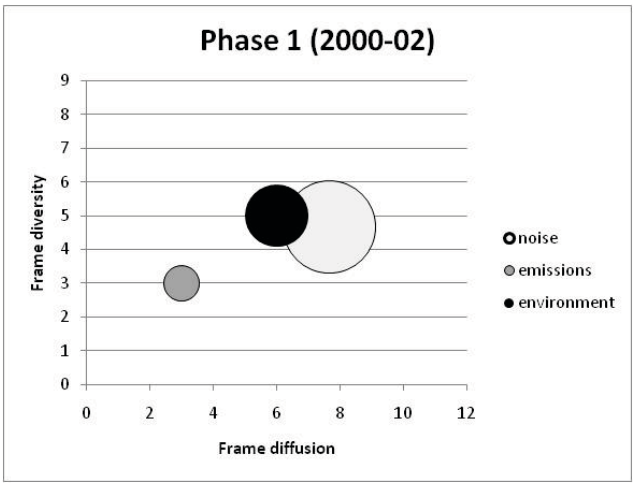
If we consider the types of frames used for different issues on Figure 7.4, some stark contrasts appear. During their respective period of salience, both noise and emissions are heavily framed in terms of "regulatory compliance" and "economic burden", and to a smaller degree as "image management", "technological innovation", and "operational efficiency". In other words, a dominant frame does emerge during periods of issue salience, but as we saw on Figure 7.2, this dominant frame does not

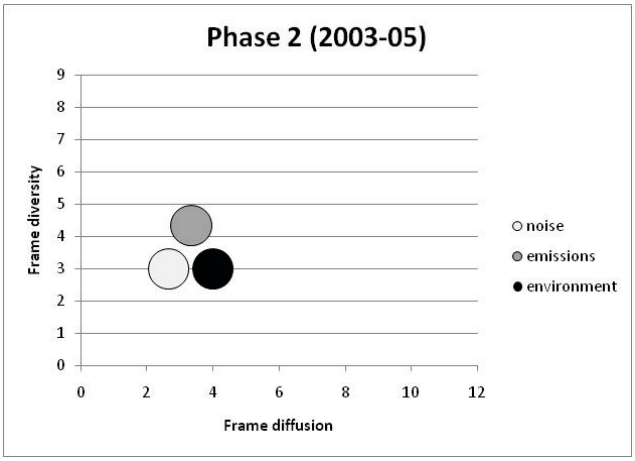
The continuous prevalence of the "regulatory compliance" frame is not surprising given the high level of regulation in aviation. Most of the discussion during periods of issue salience revolves around proposed new regulation. The frame of "economic burden" appears to follow a trend similar to the "regulatory compliance" frame, which makes sense given that the economic burden frame casts regulation as an additional cost imposed on the aviation industry in general, and on airlines in particular.

The umbrella issue "environment", on the other hand, tends to be overwhelmingly framed as "image management" during phase 3, contrasting with the framing observed in phase 1, the previous period of salience. Overall, this indicates that the umbrella concept tends to be framed differently from the specific issues it subsumes. While specific issues are framed in regulatory and economic terms, the umbrella concept concentrates most of the image management framing.

Figure 7.2: Frame Diversity, Frame Diffusion, and Issue Intensity

Note: Issue intensity is represented by the area of the bubble for each environmental issue.





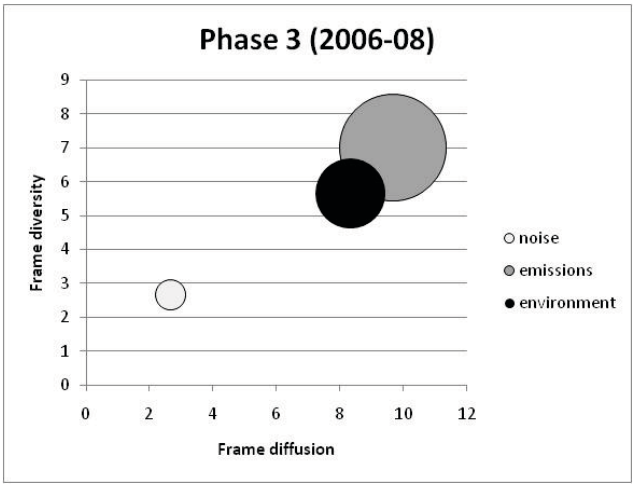


Figure 7.3: Actor Prominence around each Environmental Issue

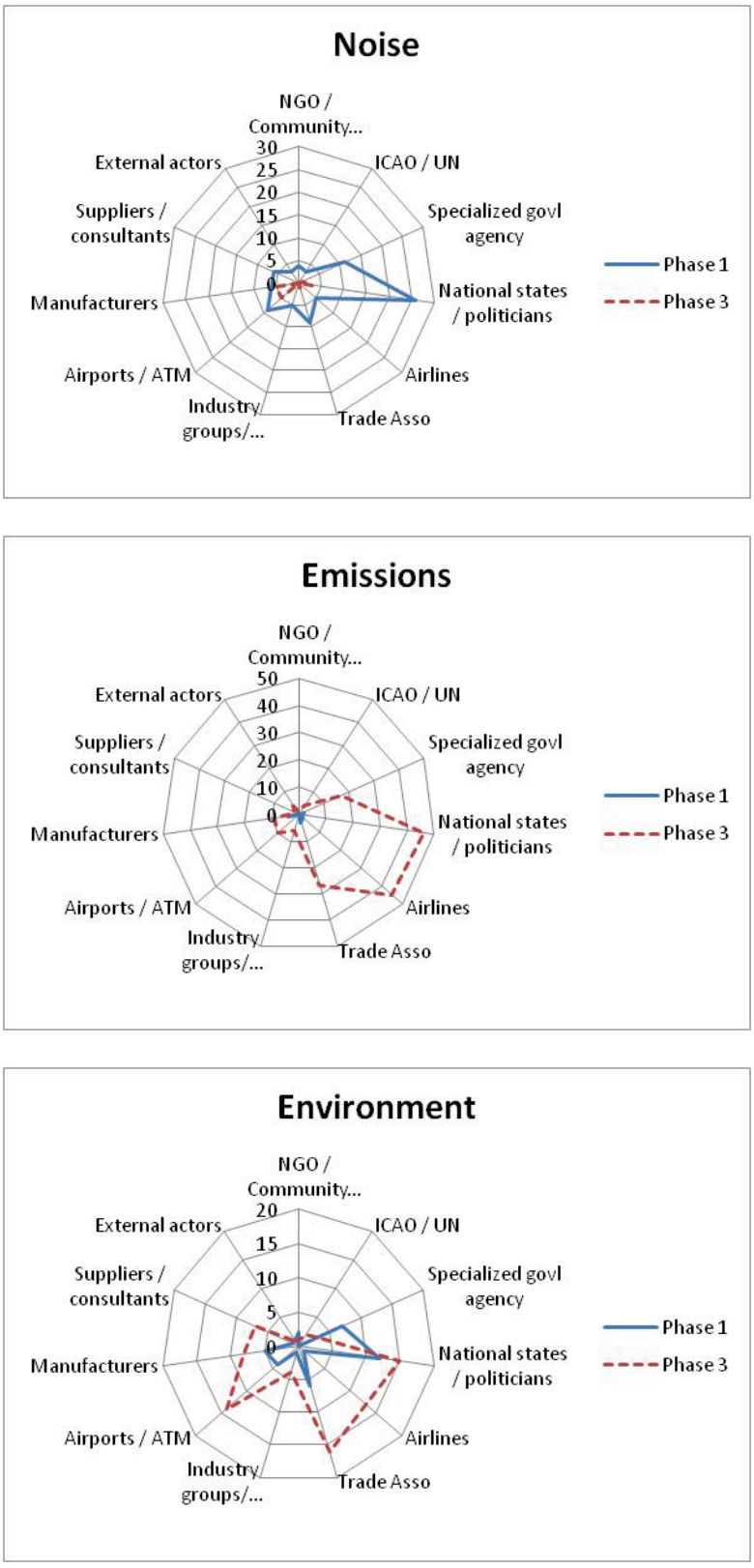
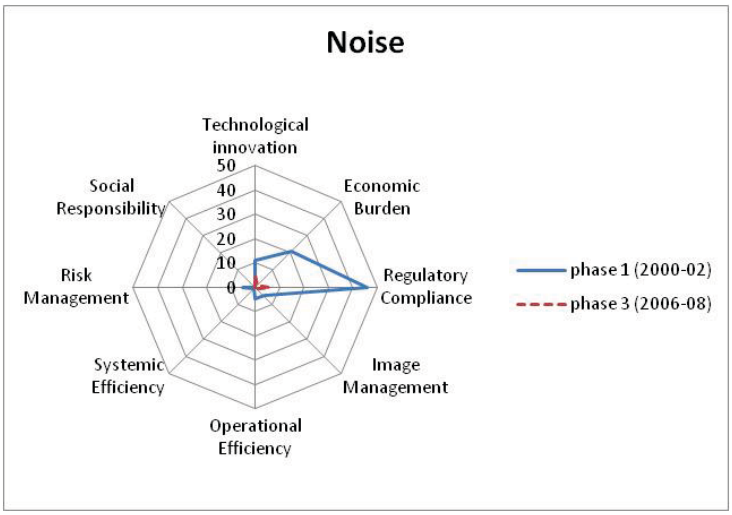
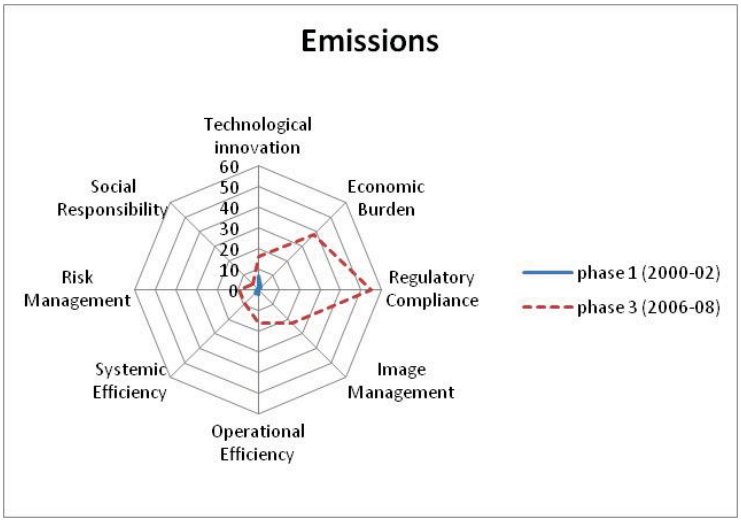
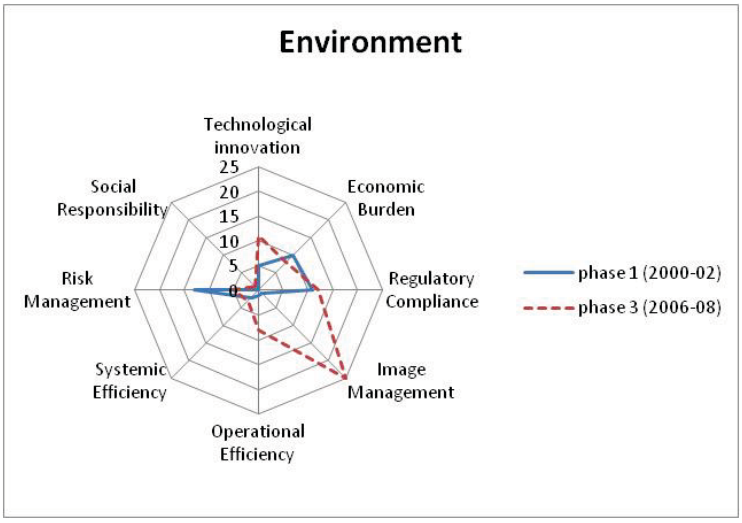


Figure 7.4: Framing Profile for each Environmental Issue

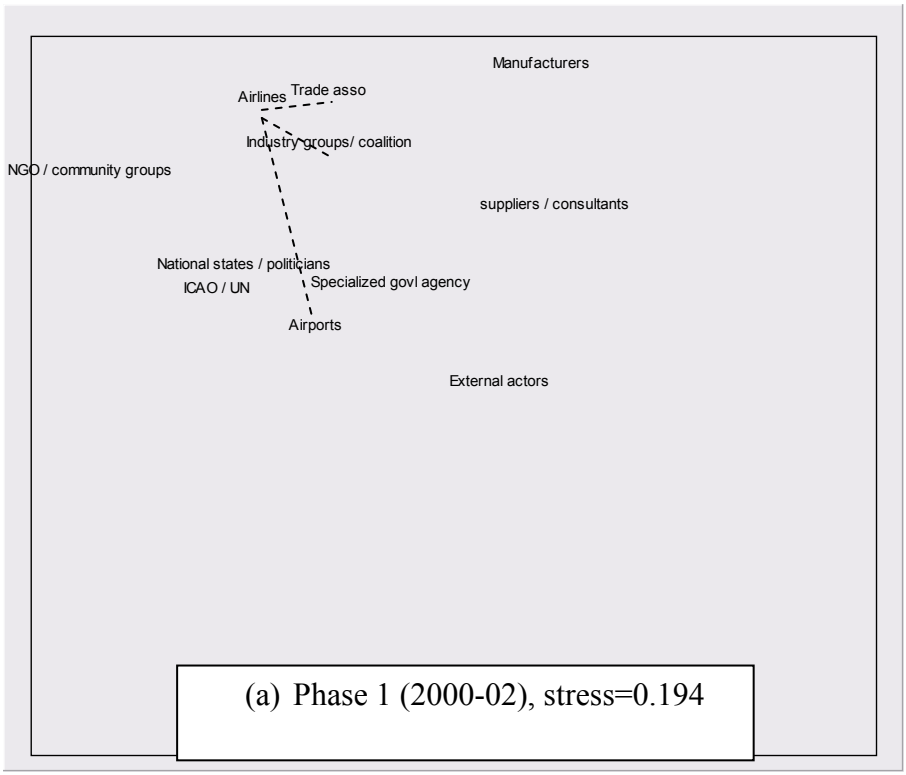




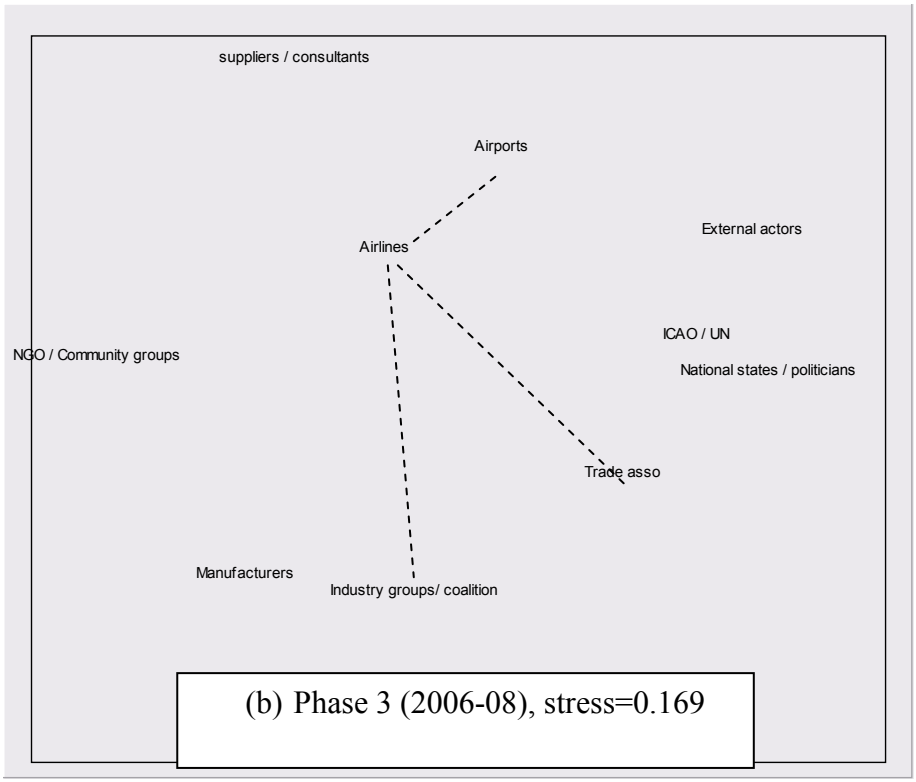


Finally, the MDS plot of actor proximity in terms of frame usage is shown on Figure 7.5. Again, the only meaningful way to interpret this plot is to consider relative distances between actors, and changes in those distances between each phase. The MDS plots provide a graphical representation of the "argumentative field structure." Although the study did not track direct contacts between various industry actors, the MDS plot allows to assess which actors are similar or dissimilar in terms of framing in any given period, on all the issues confounded. If we take airlines as our focal group, we observe significant shifts between phase 1 and phase 3 in terms of the framing proximity on environmental issues. In phase 1 airlines were close to trade association and industry coalitions, but far from airports. However in phase 3, airlines have moved closer to airports in terms of their framing, while they have moved farther from trade associations and industry coalitions. The reason for this shift can be inferred by considering Figure 7.6: both airlines and airports appear to use image management more heavily in phase 3, while trade associations and industry coalitions are more active in their lobbying efforts, thus heavily using the regulatory compliance and economic burden frames. In phase 1, in contrast, airlines tended to be similar to trade association and industry coalitions in terms of framing, while airports were dissimilar. During that phase dominated by noise, airports were directly concerned and more active in framing than airlines.

Figure 7.5: Multidimensional Scaling Plot of Actors' Similarity in Frame Usage

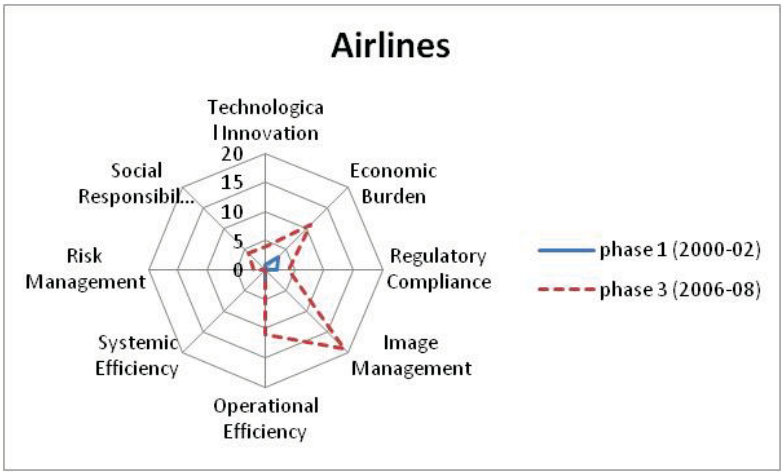


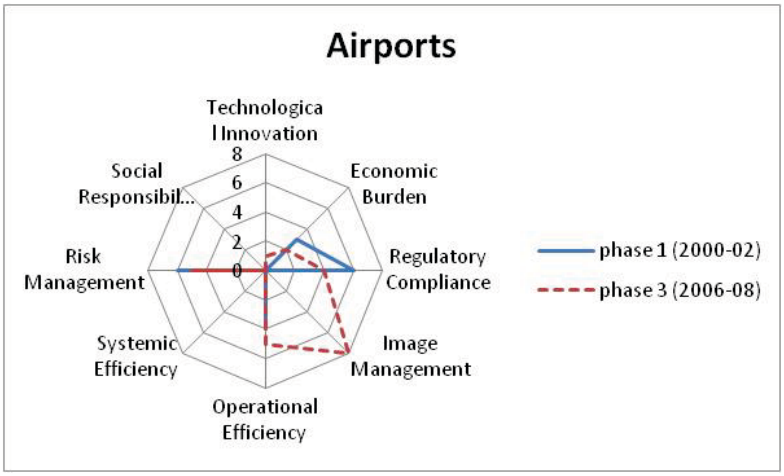
(a) Phase 1 (2000-02), stress=0.194

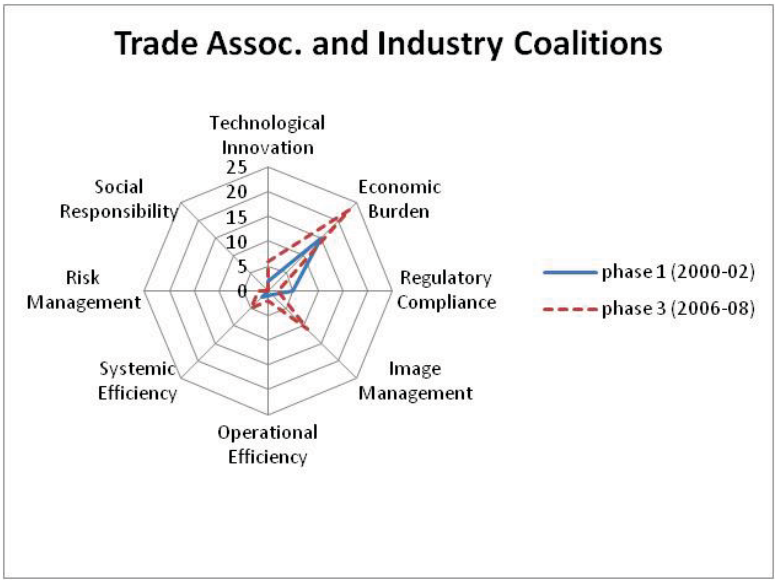


(b) Phase 3 (2006-08), stress=0.169

Figure 7.6: Framing Profile for Different Industry Actors







7.3. Synthesis and Implications

In the findings reported above, we observed a phenomenon of ebb and flow of industry problems, with distinct environmental issues becoming salient through successive waves of public debate. The discourse on environmentalism as a general construct in this industry was fueled by discussion around specific issues. Noise, a dominant issue at the beginning of the time period, was progressively eclipsed by the issue of greenhouse gases (GHG) emissions in discussions of the environmental impact of aviation. However, in each phase of issue salience, the type of framing adopted by specific actors evolved significantly, indicating that the argumentative structure of the field, i.e., the types of framing adopted by organizational actors around specific issues, was dependent on the nature of the issue at hand and the form of public contention.

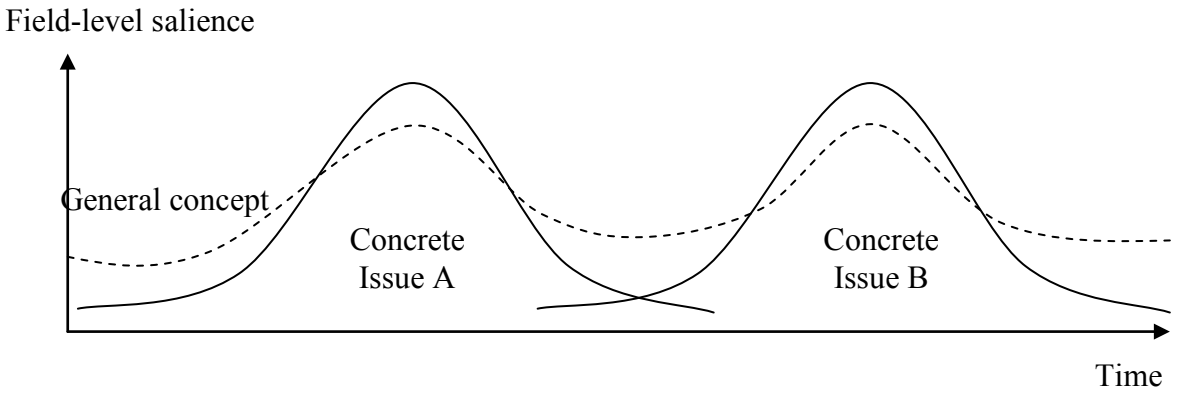
We also observed a positive relationship between frame diversity, frame diffusion and issue intensity. This indicates that concept diffusion occurred through multiplication of frames which were distributed across various actors, as opposed to the replication of one dominant frame to orient action on the environment. This finding provides empirical support for the theoretical argument put forth by Hoffman (2001), that concerns for environmental protection do not spread through industries in the form of one dominant cultural frame. Rather, a number of different framings on environmental management coexist at any given time. Such a phenomenon of *frame inflation* supports a view of diffusion as a source of variation in meaning (Lounsbury, 2001, 2007): concepts of environmental management did not coalesce or converge toward a

limited number of frames and actions in the industry studied, as a classic institutional perspective would have predicted.

Finally, we observed that the umbrella issue (the environment at large) tended to be framed more as *image management* in phase 3, while more specific environmental issues like noise or emissions tended to be framed more as *regulatory compliance* or *economic burden* in their respective period of salience. This suggests that most of the image management initiatives (addressing normative legitimacy) were positioned on an abstract level around umbrella issues, while most regulatory initiatives (addressing regulative legitimacy) were positioned around specific, concrete issues.

The findings reported here lead to questioning previous assumptions of linearity or unidirectionality in the diffusion of management concepts. We did not observe the inexorable salience of environmental management concepts, but rather periodic surges in discourse around specific environmental issues driving more general discussions of the environment at large. The frame diversity of specific environmental issues was found to be larger than that of the umbrella concept (environment), indicating that the salience of the umbrella concept was fuelled by the specific issues which it subsumes, rather than the other way around. As illustrated on Figure 7.7, the diffusion of environmental management ideas occurred through waves linked to the salience of specific issues, alternated by periods of decline in discourse.

Figure 7.7: Nested Cycles of Concept and Issue Salience.



Diffusion models should integrate the potential for messier, non-linear processes (Ferlie et al., 2005). The diffusion of management concepts may proceed by surges and fluctuations, fueled by specific controversies around distinct issues.

Instead of considering the diffusion of one specific concept of environmental management, this chapter has taken a broader perspective and has examined the evolution of issues and frames longitudinally. By doing so, the chapter has complemented the snapshot perspective of diffusion provided by chapters 4 and 5. The following and final chapter of the dissertation exposes the theoretical implications of the findings reported above, and discusses the contribution to existing theories of concept diffusion.

Chapter 8. TOWARD A PROCESS MODEL OF MANAGEMENT CONCEPT DIFFUSION AND EVOLUTION

Extant research on the diffusion of management ideas has tended to study discrete concepts that were bounded in their meaning and applications, such as TQM, or BPR. Few studies, however, have tried to capture the diffusion dynamics of more encompassing concepts such as Quality Management (Dobosz-Bourne & Kostera, 2007; Giroux & Taylor, 2002), or Safety (Gherardi & Nicolini, 2000). This dissertation extends previous theories of management concept diffusion by focusing on concepts of environmental management, chosen for their potential to illuminate interpretive dynamics of variation in the diffusion trajectory.

This chapter starts by discussing why a process perspective on the diffusion and evolution of management concepts is needed, and provides some theoretical bases for such a perspective. Second, the chapter explains how the dissertation contributes to our understanding of the interpretive process underlying the diffusion of management concepts. Finally, the limitations of the study are discussed, and some potential future research avenues on the spread of management concepts are outlined.

8.1. The Need for a Process Perspective on Diffusion

A core assumption motivating this dissertation has been the need for diffusion theory to better describe the process underlying the diffusion of

management concepts. Most diffusion research in organizational studies has examined the antecedents of adoption of a given management practice, leading to a "blackboxing" of diffusion (Lawrence & Suddaby, 2006). Indeed, the dominant metaphor in diffusion theory has long been one of a physical object travelling through a stable medium (Latour, 1986). This metaphor derives from the origins of diffusion theory, which was developed by studying the diffusion of technological innovations, often taking the form of a physical artifact such as a new drug (Coleman et al., 1957) or new agricultural seeds (Rogers, 1995). Although the classic diffusion paradigm has been disputed early on by a few authors and lines of research, including the sociology of translation (Callon, 1986; Latour, 1986), Scandinavian organizational theorists (Czarniawska-Joerges & Joerges, 1996; Czarniawska, 2005), and more recently by organizational theorists interested in sources of variation (Lounsbury, 2001, 2007), it has remained dominant in organizational theory (Sturdy, 2004). But studying the diffusion of abstract concepts requires a different theoretical perspective. Rather than one uniform concept of environmental management, we have observed varying patterns or aggregates of issues, practices and rationales that are bundled together in different ways by various actors, and that end up creating a conceptual kaleidoscope, which integrates multiple issues and interpretations. Thus, rather than asking "what are the determinants of adoption of a given concept?", the dissertation asked "through what process do given issues, practices and rationales end up being linked together by a new management concept?"

Mohr (1982) contrasted *variance theory*, which aims at capturing a relation of necessary and sufficient condition between one or several precursors and an outcome of interest, with *process theory*, which aims at capturing the sequencing of various precursors leading to an outcome (Langley, 1999; Langley, 2009). As Mohr (1982: 43) pointed out, time is irrelevant to variance models: "variance theory is state-oriented; it deals with snapshots rather than movies." Although diffusion is intrinsically a process (i.e., a temporal sequence of events), many diffusion researchers have taken a variance approach to capture diffusion dynamics. Indeed the focus of many diffusion studies has been precisely to tease out the differential effects of individual variables on the adoption decisions of individuals or organizations. However, following Lozeau and colleagues (Lozeau et al., 2002), this thesis argues that greater attention to processes of diffusion is needed to complement the traditional emphasis on antecedents of diffusion which has occupied most of the literature.

Mohr (1982) also pointed out that specifying successive steps or sequences in a process model was not enough: "Unfortunately,… process-oriented ideas in organizational behavior, and in social science more broadly, tend to be primarily of the stage-naming variety. They are incomplete from the standpoint of theory in that they simply rehearse a series of steps; they lack the lines of action - either causal or probabilistic - that must be present to convey a sense of explanation" (p53). Specifying the social *mechanisms* at work in the diffusion process provides an answer to this incompleteness of process models,

and is precisely where most theoretical work is needed. I am using the term *mechanism* as employed by Davis and Marquis (2005), who define it as "sometimes-true theories," specification of processes that constitute "an intermediary level of analysis in-between pure description and story-telling, on the one hand, and universal social laws, on the other" (Hedstrom and Swedberg 1998, cited in Davis and Marquis 2005: 336). As noted by Davis and Marquis, the specification of a mechanism does not provide a basis for prediction, because it does not provide a set of necessary and sufficient conditions leading to an outcome (Mohr 1982).

This dissertation contributes to current diffusion research by (a) developing theory on the interpretive process underpining diffusion; and (b) specifying some mechanisms leading to divergent diffusion. Each of those contributions is reviewed in sequence below.

8.2. The Interpretive Process of Concept Diffusion

Our first research question formulated in chapter 2 was, *What interpretive mechanisms underpin the diffusion of management concepts?*

To identify mechanisms of diffusion, this dissertation explored the interpretive dynamics at play when new management concepts spread in institutional fields. An overall interpretive process, labeled *naturalization*, was identified inductively and presented. Furthermore, three specific mechanisms of diffusion (*relabeling, bundling, zooming out*) were identified inductively and presented. As discussed in chapter 5, the idea of naturalization expands previous

conceptions of translation or customization by highlighting the role played by identity dynamics in this process.

Considering the identity dynamics involved in the naturalization of management ideas highlights the limitations of previous research that has relied on the ideas of *resonance* or *fit* to explain the adoption (or non-adoption) of organizational practices. For example, Kostova and Roth (2002) argued that the diffusion of practices was determined by the degree of resonance between the practice and the local institutional context. Similarly, Ansari, Fiss and Zajac (2010) hypothesize that different sorts of fit (political, cultural, technical) between a diffusing practice and the receiving organization will lead to different kinds of practice adaptation. The assumption in this line of thought is that both the diffusing practice (or concept) and the receiving organization have some objective characteristics which can be compared, leading to an objective fit between them.

But we have seen that concept diffusion entailed redefining both the diffusing concept and the receiving organization; in other words, the "fit" between them was not an objectively measurable variable, it was constructed rhetorically by organizational actors. Scholars have used different conceptual lenses to describe this work of interpretation. Zbaracki (1998) used a well established model of learning to decompose this interpretive work in nested cycles of variation – selection – retention. Strang and Meyer (1993) proposed the concept of *theorization* which they defined as "the self-conscious development and specification of abstract categories and the formulation of patterned

relationships such as chains of cause and effect" (Strang & Meyer 1993: 492). Theorization is argued to enable or facilitate diffusion by establishing conceptual links between heterogeneous populations and putting them in one conceptual whole as similar. Soule (2004) called for more research examining the role of theorization in diffusion dynamics. Specifically, she noted that one important characteristic of the concept of theorization is that it entails construction not only of the item being diffused, but also of the identity of adopters and transmitters. Indeed, as Strang and Meyer (1993: 497) argued, the adopting population and the adopted practice are often theorized jointly, they are "defined one by the other." The idea of naturalization advanced in this dissertation expands the concept of theorization by describing how a field-level institutional logic (which I have called industry ethos) influences the interpretive process of diffusion. Furthermore, this dissertation specified three underlying mechanisms (relabeling, bundling, zooming out) of interpretation, and discussed their consequences for the diffusing concept.

8.3. Explaining Divergent Diffusion

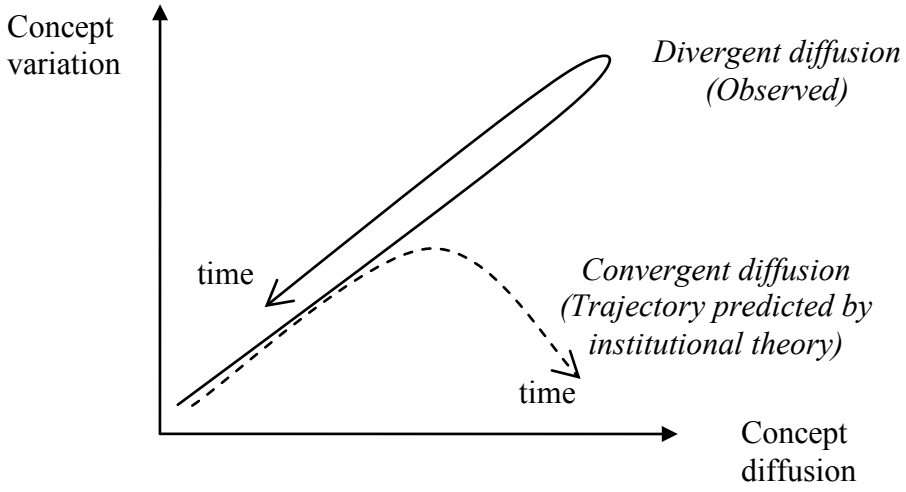
Our second research question formulated in chapter 2 was, *How does the framing of management concepts evolve as they diffuse?*

By identifying mechanisms that lead to concept variation, this thesis contributes to earlier efforts that aimed at understanding sources of variation in diffusing practices (Lounsbury, 2001, 2007). While traditional accounts of

institutional phenomena have focused on isomorphism or mechanisms that lead to uniformity or convergence, there is a need to examine in which cases diffusion might lead to divergence or variation.

The findings reported in Chapter 7 contradict an assumption underlying classic neo-institutional diffusion accounts: that the process of diffusion leads to uniformity, and reduction in variety – a model that could be labeled convergent diffusion. For example, Westphal and colleagues (1997), who studied how US hospitals adopted Total Quality Management (TQM) practices, found that earlier adopters customized TQM to their specific needs and problems, while later adopters conformed to more standard forms of TQM. This argument would lead to hypothesize the existence of a curvilinear relationship between concept diffusion and concept variation, as depicted with the dotted line in Figure 8.1. While multiple understandings and definitions coexist at the early stages of diffusion, this diversity is believed to decrease over time through isomorphism.

Figure 8.1: Convergent versus Divergent Diffusion.



In the present study, we observed a phenomenon of *divergent diffusion* in which concept variation (assessed through frame diversity) increased with concept diffusion, as depicted with the solid line on Figure 8.1. This divergent diffusion happened through phases of salience, fueled by debate around distinct specific issues. When issue intensity decreased, concept variation and concept diffusion were found to dwindle back to lower levels – thus the returning arrow on Figure 8.1.

A similar phenomenon of divergent diffusion has been reported by a number of studies, which emphasized various forms of variation in diffusion practices. In his study of how TQM was adopted in five widely different organizational settings, Zbaracki (1998) concluded that the diffusion of TQM was contradicting classic institutional diffusion predictions because its

definitions grew increasingly broad, with increasing variation and vagueness, as opposed to increasing conformity and specificity, as Westphal and colleagues (1997) would have predicted. In their study of the boom and bust of TQM consulting, David and Strang (2006) showed how the TQM fashion went through three successive phases: from technical roots to increasingly generalist formulations during the boom; and finally back to more technical and specialized forms after the bust. Zilber (2006) in her study of the Israeli high-tech industry shows how "high-tech rational myths moved from being technical or informative to being more symbolically loaded, and then, once economic success had dwindled, back to the more informative" (p284). Those changes paralleled the material movements of high tech from boom to bust.

A contribution of this dissertation is to distinguish conceptually this phenomenon from other possible diffusion trajectories, and to specify the interpretive process and the underlying mechanisms that lead to such a divergent trajectory. Eventually, this divergent diffusion trajectory may lead to "concept dilution" because through broader and more dispersed definitions the concept may become meaningless.

When considered in combination, the interpretive model of diffusion and the cycles of diffusion developed in this dissertation draw attention away from questions related to the production and consumption of management concepts, and instead direct attention toward the cyclical, uninterrupted movement of management ideas and its role in the construction of organizational fields. Other

fields of social science, most notably communications and media studies, have started to take what some authors refer to as "the circulatory turn" (Straw 2010: 23): their goal is to "challenge a concern with cultural forms which sees them principally as bearers (however mobile) of meaning." As numerous previous studies have shown, pin-pointing the meaning of a specific media form in circulation is tricky, because to a large extent it is the circulation as a process that creates meaning (Straw 2010). Researchers should therefore strive to elucidate how meaning emerges from the circulatory currents permeating society. This perspective draws attention to the "interpretive communities, whether they be coffeehouses and publishing firms or banks and stock exchanges, [which] set the protocols for interpretation by inventing forms, recognizing practices, founding institutions, and demarcating boundaries *based primarily in their internal dynamics*" (emphasis added) (Gaonkar and Povinelli 2003: 391). In their original formulation of the idea of circulation, Lee and LiPuma (2003: 194) emphasized more specifically the "institutional forms such as markets and administrative bureaucracies [which] instigate and feed off a dialectic between a continuing project of objectification and the production of subjectivity necessary to produce culturally/historically specific types of collective identity." In other words, a circulatory perspective allows to understand how interpretive communities constantly recreate collective identities and meaning through the uninterrupted influx of ideas and practices. In this dissertation I have shown how the circulation of environmental management concepts represents an opportunity for the affirmation of an industry ethos, thus

contributing to the symbolic construction of the industry as distinct. The constructs of naturalization and cyclical diffusion developed in this thesis provide a starting point for future theoretical or empirical work in organizational studies on the circulation of management concepts.

Synthesis and Propositions

The following section synthesizes the arguments made above in the form of formal propositions. *Legitimacy threat* is defined as the discrepancy between the perceived image of the industry (as reflected through the media and the general public) and the identity of the industry (industry ethos). In their study of the tobacco industry's strategic response to increasing concerns about the health risks associated with smoking, Miles and Cameron (1982: 22) argued that legitimacy "may be viewed as a political resource granted an organization by society, on a contingent basis, that is revocable or renegotiable when the organization fails to meet its social obligations." This idea can be extended to the level of the industry as a whole. The legitimacy threat creates a dissonance between images of the industry reflected by the media, and shared beliefs about the industry ethos. Naturalizing accounts (relabeling, bundling, zooming out) allow to reduce this dissonance. Thus:

Proposition 1: The higher the dissonance created by legitimacy threat, the more naturalizing accounts (relabeling, bundling, and zooming out) will be observed during the diffusion of management concepts.

As was described in chapter 5, the naturalization process not only allows reducing the dissonance created by the legitimacy threat. Increased use of naturalizing accounts (relabeling, bundling, zooming out) will also lead to more frames being used, and to a concomitant concept corruption, which at the level of the field creates divergent diffusion. This observation provides the basis to hypothesize the conditions that may lead to divergent as opposed to convergent diffusion. Thus:

Proposition 2: The higher the dissonance created by legitimacy threat, the more divergent the diffusion of a management concept will be.

Furthermore, as reported in chapter 7, the type of framing dominant in public discourse is influenced by the salience and content of public discourse. As previous research has shown, image management is one common tool used by industry actors to reduce discrepancies between organizational image and identity (Dutton and Dukerich 1991, Elsbach 1994). Thus, industry actors experiencing acute legitimacy threat will tend to use more image management as a means to reduce the dissonance between the public image and the personally-held image of their industry.

Proposition 3: The higher the dissonance created by legitimacy threat, the more image management frames will be observed.

Finally, the findings reported in Chapter 7 suggest that frame multiplication occurs particularly during periods of intense public debate around

a specific issue. Indeed, intense public debate generally occurs and is fueled by controversy around very specific issues (such as greenhouse gases emissions in recent years). Thus,

Proposition 4: Under conditions of legitimacy threat, frame diversity, frame diffusion, and issue intensity will be positively correlated.

Propositions 1 and 2 could be tested through a comparative study of concept diffusion in various industries which experienced varying degrees of legitimacy threat during the same time period, in order to compare (a) the amount of naturalizing statements in each industry, and (b) the amount of concept divergence within industries and across industries. Proposition 3 could be tested using a similar research design by comparing the type of framing used in each industry during the time period considered. Proposition 4 could be tested by a longitudinal comparison of various industries which have experienced heightened issue intensity at different times, and by comparing frame diversity and frame diffusion in each of those industries.

8.4. Limitations

The findings reported in this dissertation should be qualified by the limitations of the research design and the choice of empirical setting for the study. In many ways, aviation is a very specific industry, making generalizations to other industries difficult. The salience of the aviation industry ethos, for example, may not be comparable with other industries. Would the phenomenon

of naturalization described here be also observable in other industries? Previous work indicates that a number of other industrial sectors or professions may have their own kind of industry ethos. For example, Strangleman (1999) discussed the role played by nostalgia for an idealized "golden age of railways" in a wave of marketing and change programs in the UK railways during the 1980s. Undoubtedly, similar industry ethos dynamics are at play in a number of industries, including other transportation sectors such as the railway, maritime, and automotive, but also in mining, banking, and even computer manufacturing. For example, Guillen (1997) alluded to the salience of an aesthetic of networks and virtuality in our contemporary society, which he argued was retraceable to the expansion of computer science as a field and as an industry. To what extent the computer industry uses and reproduces this aesthetic through an industry ethos, and how this industry ethos may influence current organizational processes and field dynamics, would be interesting questions for future research.

Aviation is also unique in the sense that it is a highly regulated industry, which implies that pressures for conformity and legitimacy may arguably be higher than in less regulated industries (Kennedy & Fiss, 2009; Scott & Meyer, 1983). The salience of regulatory discussions observed in the trade publication would obviously not be observed in a less regulated industry, leading to potentially different dynamics of management concept interpretation.

But perhaps most importantly, sustainability is a very controversial concept for aviation, which generates much debate both within the industry and in the larger society. The naturalization process described in chapter 5 would

likely not be observed in contexts where no legitimacy threat would be found. Thus, a scope condition for the applicability of the theory developed here is the existence of extensive controversy or debate leading to legitimacy threat.

An important limitation is linked to the source of data used for the archival study presented in chapter 7. The study is based on one trade publication, which arguably represents a source of potential bias. The announcements and information reported by the publication may be more representative of the mindset of the editorial team than of what industry actors are really doing. However the specific tactical nature of this publication and its status as official source of information for various actors in the industry still makes it an adequate database for the purposes of the study.

Furthermore, important negotiations and discussion may happen in backstage settings, and may therefore be hidden to the observer. The dynamics of concept diffusion may only be fully understandable post hoc, after some confidential information is released. For example, secret arrangements may happen between airlines and other industry actors such as aircraft manufacturers, or even government. Such aspects of the collective processes happening at the level of the field remain opaque for the researcher. However, this limitation does not affect the interpretive processes of concept interpretation which are the focus of this study.

8.5. Implications for Future Research

Subsequent research is needed to extend some of the findings of this study. First, future studies could aim to track frame evolution for each category of actors, based on specific sources for each. While examination of frame evolution in this study was built exclusively on one trade publication, future research could compare framing and concept diffusion through multiple sources, representing other actors external to the industry, such as NGOs or the general media. This type of study could shed light on the dynamics linking broader, societal concept diffusion to industry concept diffusion. One specific avenue for future research would be to explore how broader societal concern for climate change is related to concept diffusion at the industry level.

Another avenue for future research would be to pursue the "fluid" view on diffusion defended here, and to track diffusion as configurations of frames and issues in other industries. Acknowledging the multiplicity of management concepts leads to viewing diffusion not anymore as a unidirectional, inexorable movement of one isolated entity, but rather as a more complex, cyclical, multi-wave phenomenon, involving a number of issues and rationales bundled together. Researchers of strategic change have previously shown how successive strategic frames do not replace each other but rather merge with the preceding one as in a sedimentation process (Cooper, Hinings, Greenwood, & Brown, 1996). More recently, Abrahamson and Eisenman (2008) have shown how multiple waves of management fads had a cumulative tendency to shift rhetoric toward more normative or more rational types of discourse. In a forthcoming

article, Shipilov and colleagues (Shipilov, Greve, & Rowley, forthcoming) show that the corporate governance of large Canadian firms evolved profoundly not through one time revolutionary change but rather through adoption of multiple waves of practices, each building on the preceding one. Those studies have highlighted the need to consider how previously adopted practices may facilitate or inhibit the adoption of subsequent practices. Researchers could pursue this direction of inquiry by examining how diffusing concepts or practices build momentum for subsequent diffusion, in a pattern akin to the waves of protest described by social movement researchers (Snow & Benford, 1992; Staggenborg, 1998).

Researchers working at the intersection between social movements and organizations have called for greater attention toward the role of the state in sustaining or constraining markets. As Davis et al. (Davis, Morrill, Rao, & Soule, 2008: 393) propose, "how different logics and relations of power in markets and politics help to constitute both organizations and social movements is, in part, the key to ultimately understanding social changes in the contemporary era." In the present study, the role of the state - more precisely, the roles of different governmental and regulatory bodies including states or inter-state agencies - was shown to occupy most of the discursive activity in the highly regulated industry of aviation. Future research could examine under what conditions regulatory versus technological frames of action become predominant, when both types of frames are combined or opposed, with what consequences for the dynamics of new concept diffusion in other industries.

8.6. Practical Implications

The findings reported here have substantive policy implications, especially for environmental protection. First, the aviation ethos described above can have important unintended consequences. In the case of aviation, a fascination with technological innovation can lead to a bias toward revolutionary green technologies as opposed to smaller, incremental environmental improvements, which ends up slowing rather than speeding up real change. In this dissertation I have described an industry that viewed itself as being future oriented, and embodying constant progress. Yet as various informants have underlined, the reality is that the implementation of new technologies is very slow in aviation, because of the security constraints, and also because of the very long life cycle of aircrafts. Air Traffic Management systems provide a telling example: the replacement of visual navigation aids by modern satellite-based navigation systems is still incomplete, although the technology has been available for many years. Although this thesis did not explicitly examine practice change in aviation, my findings nevertheless suggest that the naturalization process observed might reduce the capacity of the industry to implement change. The results reported above should thus alert managers to the double-edge sword of the naturalization process. An industry ethos represents a powerful symbolic resource to create coherence with past actions and enhance sentiments of belonging to a strong industry identity, but at the same time it can potentially reduce the change potential of new concepts. Future research is needed to test

more directly the implications of the naturalization process for change implementation.

Another practical implication for policy makers can be derived from the study. When it doesn't take the form of regulatory action, most inter-governmental or governmental policy on environmental protection in industry relies on conformity pressures exerted at the level of individual, usually prominent firms. The assumption behind this intervention model has been that one or a few firms would lead the way, and that other firms would follow. But as we have seen in this study, there is no universally recognized leader among airlines on the environmental front. While firms do vary considerably in the amount of marketing efforts they use, in reality there is little opportunity for substantial differentiation between them on their environmental performance. Thus, because of the interconnectedness of aviation actors, institutional change does not happen in a leader-follower mode, but rather in a collective-negotiation mode: what is needed for change to happen is the emergence of consensus and coordination between various industry actors. This "connected change" as opposed to "cascading change" is facilitated by industry-wide perception shifts.

8.7. Conclusion

The guest editors of the special issue of *Administrative Science Quarterly* on Social Movements in Organizations and Markets noted recently the increasing interconnectedness of organizational, social and political action, and called for more research exploring field-level dynamics:

> Given the increasingly permeable and blurry boundaries among organizations and social movements, it may become difficult to study a single "movement" or "organization." The units of analysis that we have become accustomed to in much of the research in social movements and organizations may therefore need to change. We may increasingly need to study fields, networks, or narratives that cut across multiple sites (Davis et al., 2008: 393).

This dissertation aimed at following their call by taking a field-analytic perspective on the spread of environmental management concepts in civil aviation. Studying malleable concepts rather than concrete practices has led us to favor an open-ended, cyclical view on concept diffusion, as opposed to the classic diffusion model inherited from rural sociology. Studying the aviation industry, which has been described as "a fragile but tightly connected system of places, private corporations and states actors, interrelated with almost all other sectors of the economy" (Urry, 2007: 142), has also led us away from previous depictions of organizational fields as homogeneous, and instead described the spread of new concepts as intimately tied with the emergence of new issues, involving new actors in separate spheres of regulation.

Diffusion research has considerably enriched our understanding of social processes (Rogers, 1995). While building on the progress achieved, new directions of scholarly inquiry have been identified to further our understanding of how management concepts spread across organizations. Greater attention to

the multiple dimensions of management concepts and to the mechanisms leading to their evolution is warranted. This research agenda is especially relevant for the concept of sustainability, which has become a "semantic magnet", hosting diverse meanings and interpretations. Tragically, by gaining more and more meanings, the idea of sustainability runs the risk of losing all its significance. Better describing the dynamics though which this and other management concepts evolve over time might ultimately illuminate ways to facilitate the important challenge which Kofi Annan exhorted us to tackle: translating "an idea that seems abstract … into a daily reality."

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LIST OF ABBREVIATIONS

Organizations:

AEF: Aviation Environment Federation, a London-based NGO.

ATA: American Air Transport Association.

CAEP: Committee for Aviation Environmental Protection, an ICAO working group specialized in the technical work on environmental issues including noise, local air quality and climate change emissions.

CANSO: Civil Air Navigation Services Organization.

GIACC: Group in International Aviation and Climate Change, an ICAO working group focusing on aviation policy matters related to climate change more specifically.

IATA: International Air Transport Association.

ICAO: International Civil Aviation Organization.

ICCT: International Council on Clean Transportation.

ICSA: International Coalition for Sustainable Aviation, a coalition of international NGOs. Its role is to represent NGOs in ICAO processes and workgroups, primarily in CAEP.

SAFE: Sane Aviation for Everyone, a NYC-based NGO.

T&E: Transport and Environment, a Brussels-based NGO.

US-CAW: United States Citizens Aviation Watch.

Some acronyms used in Aviation (short list):

ADS-B: Automatic Detection Surveillance Broadcast.

ANSP: Aircraft Navigation Service Provider.

ATFM: Air Traffic Flow Management.

ATM: Airspace Traffic Management.

CDA: Continuous Descent Approach.

DMAN: Departure Management.

FMS: Flight Management System.

NOX: Nitrogen Oxide. A pollutant emitted by aircraft engines.

PBN: Performance Based Navigation: a program led by ICAO to facilitate the implementation of satellite-based navigation, to optimize flight routes and gain on flight efficiency.

RNAV: Air Navigation.

RNP: Required Navigation Performance.

RVSM: Reduced Vertical Separation Minimum, a project led by ICAO to reduce the spacing between aircrafts and thus increase the carrying capacity of existing air spaces.

SWIM: System Wide Information Systems.

APPENDIX: Interview Protocols

Interview Protocol, Field-level interviews

A - Introduction

Purpose of the interview: explain what the research project is about.

Sign consent form, mention uninterrupted time needed (1hr – 1.5hr).

Provide opportunity to ask any questions at all about the study before beginning.

B – Sustainability in aviation: the past

- When would you say the industry started to talk about sustainability?
- Do you remember any specific event or controversy that involved the aviation industry? Could you please describe to me in detail this particular event or controversy?
- What are important successes/progress the industry has made towards becoming more sustainable?
- What has the industry not been able to achieve toward becoming more sustainable?

C – Sustainability in aviation: the present

- What concrete sustainability issues or problems are presently faced by the industry?
- Why do you think the industry is acting on sustainability? What are its motivations?
- What would you say are the major difficulties or barriers the industry is encountering in its efforts toward sustainability?
- In case they haven't been mentioned spontaneously by the informant, ask specifically about: noise; carbon emissions; air quality.

D – Sustainability in aviation: the future

- What do you think are the greatest challenges that the industry will face in the coming years regarding sustainability?
- Can the industry become truly sustainable? What does "truly sustainable" mean in your view?
- If yes, what is needed for the industry to become sustainable?

E – Your personal view on the civil aviation industry

- Let me now turn to your personal experience. Under what circumstances did you begin to be involved with sustainability at your organization?
- How has your personal involvement evolved since then (if in any way)?
- Now let me inquire about your personal views about your organization's actions toward addressing sustainability in the aviation sector. What are the things that you really like about what your organization is doing?
- What are some things that you don't like so much about how your organization is acting on sustainability in the aviation sector?
- How do you feel about what your organization is doing regarding sustainability?
- If you had the power to change things, what would you do differently?

F – Background Information

- Name.
- Organization.
- How long have you been at this organization?
- Mailing Address.
- Phone/Fax.
- E-mail address.
- Title of current position.
- Department you work for.
- How long have you been in this department?

G – Closing the interview

- Make sure all required information has been collected.
- Would it be possible to have access to internal documents such as work group meeting notes, special reports, newsletters, etc. that you think might help me in this project?
- Is there anything you would like to add, or talk about that I have not given you a chance to address?
- If, after reviewing the contents of this interview, I realize that I am still missing some information, may I contact you by phone for a few follow-up questions?
- Thank you.

Interview Protocol, organizational level interviews

A - Introduction

Purpose of the interview: explain what the research project is about.

Sign consent form, mention uninterrupted time needed (1hr – 1.5hr).

Provide opportunity to ask any questions at all about the study before beginning.

B – Understanding sustainability at your organization: the past

- Do you remember when people started to talk about sustainability in this organization?
- What does sustainability mean in your organization?
- Are there any specific individuals (members of the organization) who you identify with sustainability in those early days?
- What were those individuals saying? What was the message?
- How was that message received within the organization?
- Do you remember any specific event or controversy that involved external parties (such as NGOs, government, etc…)? Could you please describe to me in detail this particular event or controversy?

C – Understanding sustainability at your organization: the present

- What concrete issues or problems are addressed by the sustainability plans in this organization at the present time?
- Why do you think your organization is acting on sustainability? What are its motivations?
- What are important successes/progress? What has worked well?
- What hasn't worked so well? Any failed initiatives?
- What would you say are the major difficulties or barriers the organization is encountering in its efforts toward sustainability?
- In case they haven't been mentioned spontaneously by the informant, ask specifically about: noise; carbon emissions; air quality.

D – Understanding sustainability at your organization: the future

- Does your organization have a vision about sustainability in the future?
- How long do you think it will take for your organization to become truly sustainable?
- What is needed for the organization to become sustainable?

E – Your personal view

- Let me now turn to your personal experience. Under what circumstances did you begin to be involved with sustainability at your organization?
- How has your personal involvement evolved since then (if in any way)?
- Now let me inquire about your personal views about your organization's sustainability program. What are the things that you really like about what your organization is doing?
- What are some things that you don't like so much about how your organization is acting on sustainability?
- How do you feel about what your organization is doing regarding sustainability?
- If you had the power to change things, what would you do differently?

F – Background Information

- Name.
- Organization.
- How long have you been working at this organization?
- Mailing Address.
- Phone/Fax.
- E-mail address.
- Title of current position.
- Department you work for.
- How long have you been in this department?

G – Closing the interview

- Make sure all required information has been collected.
- Would it be possible to have access to internal documents such as work group meeting notes, internal letters to employees or to shareholders, etc. that might help me understand your organization's posture and practice related to sustainability?
- Is there anything you would like to add, or talk about that I have not given you a chance to address?
- If, after reviewing the contents of this interview, I realize that I am still missing some information, may I contact you by phone for a few follow-up questions?
- Thank you.