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A RHETORICAL APPROACH TO IT DIFFUSION: RECONCEPTUALIZING THE IDEOLOGY-FRAMING RELATIONSHIP IN COMPUTERIZATION MOVEMENTS[1]

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In this paper we propose rhetoric as a valuable yet underdeveloped alternative paradigm for examining IT diffusion. Building on recent developments of computerization movements theory, our rhetorical approach proposes that two central elements of the theory, framing and ideology, rather than being treated as separate can be usefully integrated. We suggest that IT diffusion can be usefully explored through examining the interrelationship of the deep structures underlying ideology and the type and sequence of rhetorical claims underpinning actors' framing strategies. Our theoretical developments also allow us to better understand competing discourses influencing the diffusion process. These discourses reflect the ideologies and shape the framing strategies of actors in the broader field context. We illuminate our theoretical approach by drawing on the history of the diffusion of free and open source software.

Keywords: Computerization movements, diffusion, IT innovation, discourse, open source, free software, ideology, rhetoric

Introduction

Information systems scholars have long sought to address a question central to our discipline: How or why do some IT-related innovations diffuse widely, while others do not? An economic-rationalistic logic has been the dominant paradigm for IT innovation research (Fichman 2004) and has focused on

how managers rationally assess factors affecting IT diffusion and relate them to their expected economic returns. While this work has been extensive and illuminating, scholars increasingly accept that new approaches are needed that go beyond this world view and take account of the "irrationalities" stemming from the broader institutional context surrounding organizational actors (Avgerou 2000; Mignerat and Rivard 2009; Orlikowski and Barley 2001; Teo et al. 2003). Swanson and Ramiller's (1997) theoretical developments of IT diffusion shift the focus beyond the organization to recognize the wider focal community who develop what

they term an organizing vision. This vision for organizing concerns the application and use of early stage IT innovations in the focal organization.

We build on these theoretical developments to better account for actors' diverse political and strategic skills and interests (Garud et al. 2002) in the focal community, and how the ensuing dynamics influence the diffusion of early stage IT innovation. A key challenge for these actors is to mobilize and sustain cooperation within the focal community, especially as other actors in the community may develop competing discourses which influence the process of IT diffusion. Recent developments in a less well known perspective on IT diffusion, computerization movements (CM) (Elliott and Kraemer 2008; Iacono and Kling 2001; Markus et al. 2008), have recognized the role of competing discourses and offer some key concepts such as technological action frames and ideology which we develop in furthering our understanding of diffusion of IT related innovation. More specifically, we develop a rhetorical approach (Green 2004; Green et al. 2009; Heracleous and Barrett 2001) to reconceptualize the ideology-framing relationship in CM theory as an interdependent and recursive one, to illuminate the dynamic of competing discourses of key actors in the broader context of the field, which influences the diffusion of IT-related innovation.

The rest of the paper is organized as follows. We start with a brief review of IT diffusion highlighting recent calls for developing alternative paradigms on IT diffusion in the IS literature. We go on to suggest how CM theory can be usefully built upon to adequately recognize the dynamics of competing discourses and their influence on the broader field. Subsequently, we develop our rhetorical approach to the diffusion of IT-related innovation, and illuminate our theoretical concepts by drawing selectively on the history of free and open source software (F/OS) as it has evolved over a 30-year period. Finally, we discuss contributions of the paper and possible future uses of our new theoretical approach.

IT Diffusion and Computerization Movements Research

Over the last couple of decades, diffusion of IT related innovations has emerged as an important stream of research. The traditional focus of this research has been on the factors that facilitate or inhibit the spread of different information technologies through populations of potential adopters (Fichman 1992). Many reviews (e.g., Fichman 2004; Swanson 1994) have highlighted the dominance of economic-rationalistic models across multiple levels of analysis including individuals (Brancheau and Wetherbe 1990), organizational units, and firms (Cooper and Zmud 1990). For example, at the individual level, an important determinant of adopter innovativeness is the level of skills and knowledge gained over the course of the adopter's cumulative involvement in innovation activities (Fichman 1992). Other research (e.g., Venkatesh et al. 2003) includes models of diffusion such as technology acceptance models (TAM) and the unified theory of acceptance and the use of technology (UTAUT), which focus on user preferences based on psychological predispositions to physical characteristics of IT. While this literature has provided useful rationalistic and independent assessments as to how potential adopters can effectively evaluate innovations and manage the process of assimilating them, the focus has been limited to the intrinsic technological value of the innovation and the characteristics of potential adopters (see Rogers 1995). Further, this literature does not adequately recognize the social processes inherent in either diffusion processes (Avgerou 2002; Silva 2007) or the role of language and discourse (Abrahamson and Fairchild 1999; Green 2004).

More recently, scholars in the IT diffusion literature (e.g., Fichman 2004) have acknowledged and encouraged alternative possibilities of technically inefficient and "irrational" approaches. For example, the management fashion literature would recognize the role of knowledge entrepreneurs in promoting IT diffusion through innovation related discourse or "hype" (Swanson and Ramiller 1997) which may lead to transient as opposed to institutionalized adoption (Abrahamson and Fairchild 1999; Fichman 2004; Wang 2010). These studies have highlighted the dynamics by which a new fashion is triggered by the downswing of a prior fashion (e.g., Abrahamson and Fairchild 1999; Carson et al. 2000) and have noted the relationship between the nature, content, and type of discourse, and the discourse intensity. An upswing in discourse intensity may be associated with an emotional unreasoned discourse and a downswing likely to involve a more reasoned and unemotional discourse. Taking seriously rhetorical devices (and types) of discourse developed in the broader institutional context (Attewell 1992; Robey et al. 2000) is important, yet largely lacking in our understanding as to how IT diffusion is shaped (Swanson 2002). Similarly, Bazerman (1999) demonstrates in his carefully developed work that much is to be gained beyond the lens of individual psychological traits and fixed technological capabilities by following the texts and tracing actors' negotiation of the rhetoric surrounding an innovation. He argues that one needs to trace the textual dynamics involved with the technological innovation as it becomes defined and gradually embedded in a particular context.

The organizing vision has recently emerged as a stream of IT diffusion research which adopts an institutional and discourse perspective. An organizing vision (Swanson 2002; Swanson and Ramiller 1997) is linguistically constructed through rhetoric produced and sustained through the focal community discourse, the parties to which are united by a common interest in shaping the innovation. This literature problematizes the diffusion spread as taking place not just through mere communicative contact but according to the substance and sources of the message informed by the vision. The proponents (Swanson and Ramiller 1997, 2004) of the theory suggest that it provides three critical functions in supporting the diffusion of IT related innovations. First, it allows the development of a common interpretation about the uses, usefulness, and importance of the innovation. Second, it legitimizes the innovation by linking it to commonly accepted business problems. Third, the vision helps to mobilize industry actors to engage with the innovation.

The organizing vision displays a "career" through which it may travel, being launched by interested proponents, achieving high fashionableness, and being reshaped, pulled and pushed in different directions. The trajectory of the vision is dependent on the progress and success of the innovation's diffusion and the community's interpretation. However, while the literature recognizes the variety of participants in the discourse community who are "united in their commitment to the innovation's public interpretation but differentiated by their interests" (Swanson and Ramiller 1997, p. 464), we know less as to the why and how of the career dynamic. For this, we suggest a theoretical focus that additionally takes account of the dynamics of competing discourses as they emerge in the broader field and the consequences for organizing visions.

More recent theorizing in the organizing vision literature highlights that from the very early stages of the diffusion process, diverse actors evolve dynamically in the focal community (Wang 2009). They strategically engage in discourse in an attempt to create coherent visions (Wang and Swanson 2007) which might provide legitimacy to innovations. That is, competing discourses and organizing visions emerge as actors draw on, and use, discourse and rhetorical claims (Suddaby and Greenwood 2005) to legitimate innovations. These legitimating discourses can vary interpersonally across different interest groups (Heracleous and Barrett 2001; Suddaby and Greenwood 2005) involved with the diffusion of an IT related innovation as well as temporally across different stages of diffusion (Green 2004; Green et al. 2009).

In the process, a dominant institutional entrepreneur may actively ignore the existing organizing vision of another, and through a process of counter-mobilization promote and develop their own organizing vision. The resulting contestation for control and challenge to legitimacy is an intensely political process. Garud et al. (2002) highlight the example of Microsoft who demonstrated counter-mobilization strategies by developing Blackbird to challenge Sun's existing coalition with other technology firms around the software development language Java. In turn, Sun demonstrated the political acumen to sustain their existing collaborations by reframing the issues involved, and by changing their mobilization strategies to (re)gain cooperation across the wider field.

Computerization Movements and Technology Diffusion

Computerization movements (CMs) have been defined as "a kind of movement whose advocates focus on computer-based systems as instruments to bring about a new social order" (Kling and Iacono 1995, p. 3). In so doing, it places IT innovations into a larger and more complex macro-sociological context (Elliott and Kraemer 2008). At the center of CM theory is the recognition that the diffusion of IT innovation is not merely the product of research labs and industrial firms but should be seen as the product of social movements (Iacono and Kling 1996).

Computerization movements research has highlighted the way in which competing discourses influence the stages of diffusion (Elliott and Kramer 2008) of IT related innovations. These emanate from the key ideological beliefs held by actors underpinning the relationship between computerization and a preferred social order (Kling and Iacono 1994), and can serve to legitimize or oppose investments in computerization. More recent developments of CM theory have usefully highlighted how (re)framing shapes discourses around technology which serve to mobilize individuals to promote diffusion of technology. Through this process, a dominant frame may develop and as the computerization movement continues, a competing discourse (Elliott and Kramer 2008) may challenge and, if successful, potentially replace the dominant frame thereby influencing the diffusion of IT related innovations.

The shift away from ideology to an emphasis on framing in the diffusion of IT related innovation has focused on "the role of discourse and frames in the mobilization of collective action and the development of meaning around a focal technology" (Iacono and Kling 2001, p. 75). This conceptual thrust has sought to understand how diffusion is linked to a wider set of public and professional discourses being developed and mobilized by influential stakeholders. In IT diffusion, technology frames are composite understandings as

to how a technology works and may be used (Orlikowski and Gash 1994), highlighting that social meaning attributed to technical artifacts is built up and exists only in discourse (Bijker 1995). Further, technology frames are constituted when interactions among relevant actors develop around a particular artifact. These are both dynamic and dialogical in nature involving an interindividual, interactional, and contested process between actors such as movement entrepreneurs. In this process, these movement entrepreneurs can amplify and extend existing ideologies or act as antidotes to them in the framing process.

Bringing Ideology into Relationship with Framing in CM Theory

The seeming shift of emphasis (intentionally or not) from ideology to frames and framing in CM theory has been at the expense of appropriating ideology as a central theoretical concept. We suggest the need to emphasize ideology in the ongoing development and conceptualization of CM with a particular focus on better understanding the interrelationship between ideology and framing in the dynamics of technology diffusion. Recent debates by framing and ideological proponents offer a useful starting point in conceptualizing this interrelationship.

On the one hand, framing proponents (Benford and Snow 2000) suggest that ideology is a cultural resource, whose beliefs and values need to be articulated and exploited in constructing collective action frames, which can simultaneously facilitate and constrain framing processes. These processes involve cognitive structures molded in interaction through talk, persuasion and rhetorical posturing, and are perceived to be less elaborate compared to established ideologies. In other words, while not all frames are ideologies, ideologies as deep structures can function as frames.

Building on this observation, we suggest that ideologies can be conceptualized as deep structures which are persistent, hidden elements such as conventions, assumptions, or cognitive maps that underlie and shape observable actions (Gomez and Jones 2000). This view is consistent with the perspective on deep structures as the rules and resources that exist in actors' cognitive maps, and that actors instantiate through drawing on them in their daily practices (see Giddens 1984). Deep structures are "relatively stable, largely implicit, and continually recurring processes and patterns that underlie and guide surface, observable events and actions" (Heracleous and Barrett 2001, p. 758). From a discursive perspective, rhetorical features such as central themes, root metaphors, and rhetorical strategies can function as deep structures in specific

social contexts (Heracleous 2006). Since ideologies are at an elemental level expressed discursively, and because rhetorical features can be central structuring elements in ideological systems, ideology can, by extension, function as a type of deep structure in social systems. The rhetorical elements that lie at the heart of ideologies frame how issues are interpreted and acted upon.

On the other hand, ideological proponents emphasize a foundational difference between framing as rooted in linguistic studies of interaction and ideology as rooted in politics (Johnston and Oliver 2000). Ideology is considered to be a fundamental backdrop to framing processes with political implications for belief systems, values, and norms in facilitating or constraining social change. For these scholars, conflating ideology and framing risks sidelining political dimensions in favor of linguistics and structures of meaning. Further, it does not adequately allow for distinguishing between the complex set of ideas and its invocation in a particular instance. By understanding the complex and deeply held ideologies of movement entrepreneurs, it is argued we may be better positioned to understand why particular frame disputes occur or why particular frames lead to different patterns of activism. Movement entrepreneurs are recognized as thinking ideologically and for being explicitly concerned with values and norms underpinning a consistent understanding of society.

Toward a Rhetorical Approach to IT Diffusion

Our theoretical approach builds on CM theory by highlighting the mediating role that rhetoric can play in theorizing the relationship between technology action frames and ideology in the diffusion of IT related innovation. We start by discussing the role and use of rhetoric in IT diffusion and more generally in the diffusion of practices in the organizational literature. Subsequently, we draw on conceptual themes from these different streams to suggest how rhetoric can play a key mediating role in the interrelationship of ideology and framing for IT diffusion.

Role of Rhetoric in Diffusion Processes

Given rhetoric's explicit and long standing nature as the art of persuasion in particular contexts (Aristotle 1991), it is through rhetoric that agency is restored as actors attempt to shape the legitimacy of practices to suit their goals and interests. By making persuasive arguments, actors justify and rationalize

the adoption of a practice, thereby enabling its diffusion (Green et al. 2009). Earlier approaches highlighted the rhetorical enthymemes or "arguments-in-use" of different actors as well as deep structures that guide actions and influence the IT diffusion process (Heracleous 2006; Heracleous and Barrett 2001). The arguments-in-use of conflicting stakeholders have been shown to exhibit a deep structure that is relatively stable over time and guides stakeholders' interpretations and actions, and may enable or constrain technology diffusion (Heracleous and Barrett 2001). IT diffusion from this perspective is related to the perceived effects of technology on issues such as politics, power, and autonomy, framed and interpreted through agents' rhetorical competence.

A parallel, but unconnected, stream (Green 2004; Green et al. 2009; Philips et al. 2004; Zilber 2002, 2006) has emphasized the role of the symbolic, as well as rhetoric, in the diffusion processes. Earlier work (Greenwood et al. 2002) builds on theorization, which, as Markus et al. (2008) note, is similar to technological action frames, and focuses on the discursive process of matching adopters to practices and practices to adopters (Greenwood et al. 2002; Strang and Meyer 1993). More recent work on the rhetorical theory of diffusion examines the role of language in actively legitimizing how practices are theorized or interpreted (Green et al. 2009). As a practice becomes more widely diffused and accepted, the number and frequency of rhetorical justifications should decrease, gradually becoming part of the ever present deep structures.

In the process of achieving cognitive legitimacy or "taken-for-grantedness," specific types of rhetorical justifications play an important role in the diffusion process. Green (2004), following the categories established in classical rhetoric (Aristotle 1991) distinguishes three types, namely pathos as passionate and emotional appeals to an audience's self-interest (which tend to elicit powerful yet unsustainable social action); logos as an appeal based on logic or reason (which elicits means–ends calculation to achieve efficiency or effectiveness); and ethos as an appeal to socially accepted norms (concerning whether an activity is morally "the right thing to do"). Actors draw on these rhetorical justifications in their framing of the technology to mobilize movement around meaning structures, and sustain, create, or challenge ideological (relations of) dominance. At the same time, language facilitates the production and acquisition of different forms of legitimacy. For example, while pathos and logos justifications produce pragmatic legitimacy and appeal to the audience's self-interests, ethos appeals facilitate the production of moral legitimacy at the level of social and collective interests. Green proposes that pathos justifications have

persuasive affect with potentially rapid rates of adoption, logos appeals allow for a broader diffusion as a consequence of logical pleas, while ethos justifications are effective in sustaining levels of diffusion.

A rhetorical view of institutionalization suggests that institutionalized practices are embedded in arguments which reflect and shape the beliefs that guide practical action. Further, the diffusion and institutionalization of practice can be understood as a change in the structure of arguments used to justify a practice over time (Green et al. 2009; Heracleous and Barrett 2001) or, put another way, as a persistent and significant change in the types of conversations that take place as a part of actors' routines within organizations (Ford and Ford 1995). In the early stages of institutionalization, complex arguments with justifications are needed to persuade someone by advocating the moral or pragmatic value of a material practice. Over time, there may be a collapse of the argument structure which suggests evidence of past persuasion and indication of taken-for-grantedness and higher levels of cognitive legitimacy. In other cases, the arguments may not collapse but stay contested for a long time, suggesting the potential for the partial diffusion of a practice without institutionalization. In sum, the structure of an argument at a point in time and the change in argument structure over time reflects both the state and process of institutionalization. Arguments, if persuasive, may be both constraints on the actions of individuals as well as resources that can be used by actors to provide opportunities to set one institutional logic or belief against the other or to create new ones (Creed et al. 2002; Green et al. 2009). Through the recombining and mobilizing of existing arguments and logics, actors in reinterpreting the world can be actively and creatively involved in the construction of new arguments.

Theorizing Ideology and its Relationship to Framing in IT Diffusion

As discussed above, rhetoric plays a mediating role connecting technology action frames to ideology in examining the diffusion of IT related innovation. We now consider how framing and ideology, as central elements of computerization movement theory, rather than being treated as separate, in fact operate together. Specifically, as we argue below, ideology is manifested in discourse, in particular being intimately linked with discursive deep structures that pattern surface communications. Such deep structures can be explored through analysis of surface communications, typically through rhetorical means, including root metaphor analysis, analysis of enthymemes, or identification of rhetorical strategies that promote certain frames over others; all of which are encom-

passed in the field of rhetoric. In effect, framing as a rhetorical strategy is the public, observable face of ideology as deep structure.

Ideology as Deep Structure

Ideology as a concept has had a long history, being coined initially as a "science of ideas" by Destutt de Tracy in 1796. The concept rapidly took on a pejorative meaning with politically charged overtones when it was employed by Marx, Engels, and subsequent social thinkers such as Gramsci and Althusser (Eagleton 1991). In this critical theory formulation, ideology was seen as a system of beliefs employed by the powerful to justify their domination and the status quo, making existing social and political arrangements appear natural. More recently, ideology has been used to refer to the belief system of any social movement (Wilson 1973), which serves as a way of understanding of ethical, moral, and normative principles that guide personal and collective political action for change, based on value commitments (Johnston and Oliver 2000).

Ideologies, as sets of beliefs, are interest-laden and designed to bring about, perpetuate, or change social orders, and are manifested in discourse (Fairclough 2005; van Dijk 2006). They have an essentially cognitive nature, as shared systems of beliefs that are fundamental and axiomatic, structuring other beliefs, attitudes, and evaluations, and expressed discursively in various ways including selected themes, vocabulary, syntax, and rhetorical structures (van Dijk 1995, 2006). As we discuss in the next subsection, a prime way of understanding ideology is through the rhetorical analysis of discourse.

Discourses are bodies of texts that have a dual nature; they are both patterned by deep structures (intimately linked to ideological beliefs), as well as expressed in terms of surface communicative actions (Heracleous and Barrett 2001). Fairclough (2005, p. 916) supports a position of analytical dualism, where discourses are seen as embodying both elements of events and social practices at a surface level, as well as social structures at a deeper level. In this sense, one does not have to choose between agency and structure, but rather has to understand their interrelations and mutual constitution through the analysis of discourse.

Similarly, ideologies have been conceived as fundamental belief systems operating at the level of deep structures, encoded in actors' cognitive schemata, and manifested in discourses (Giddens 1979, 1984). These levels exist in a recursive relationship; discourses draw from ideologies via actors' cognitive schemata, and ideologies gain their con-

tinued relevance and longevity through being instantiated in discourses. As a result, meanings develop and are contested through discursive interactions between actors with different interests (Grant and Hardy 2003) as struggles around meanings that establish and sustain relations of domination (Thompson 1984; 1990) are played out.

Rhetoric as Framing

Rhetoric is the art of effective persuasion in different contexts to advance certain interests (Aristotle 1991; Cheney et al. 2004). It has been viewed in a variety of ways in management research: as a managerial tool of influence and control; as a means of understanding agents' interpretive schemes; as a way to understand institutional logics; as a means of organizational identity construction; and as a means of analyzing the role of organizational narratives (Hartelius and Browning 2008).

As suggested above, ideologies are inherent in social life given their textually mediated nature (Fairclough 1999) and are produced, reproduced and shared through text and talk (van Dijk 1995). A prime way of understanding ideologies and their effects is therefore to analyze their manifestation in discourses, and rhetorical analysis is a prime means of doing so. Lawrence and Suddaby (2006), for example, suggested that rhetorical analysis could productively be employed to understand arguments relevant to the creation, construction, or disruption of institutions. Further, Barley and Kunda (1992) demonstrated that persistent managerial rhetorics are reflections of deeper cultural and ideological substrates.

Discursive deep structures and their links to ideologies can be explored in different ways; for example in terms of root metaphors (Smith and Eisenberg 1987), in terms of enthymemes (Heracleous and Barrett 2001), or in terms of rhetorical strategies (Suddaby and Greenwood 2005). In a variety of studies, these ways of exploring deep structures pointed to their intimate link with ideologies, and clarified the nature of these ideologies. Smith and Eisenberg (1987) found that the root metaphors of employees and management at Disneyland pointed to widely different world-views and social reality of these groups with respect to the nature of work. Heracleous and Barrett (2001) found that the enthymemes of different agents in the London insurance market revealed their differing conceptions of the effects of new technology on their work and identity and therefore their stance toward these technologies. Finally, Suddaby and Greenwood (2005) found that rhetorical strategies drawing from different ideologies about the role of professional services were employed to support or oppose the introduction of a new organizational form in this industry.
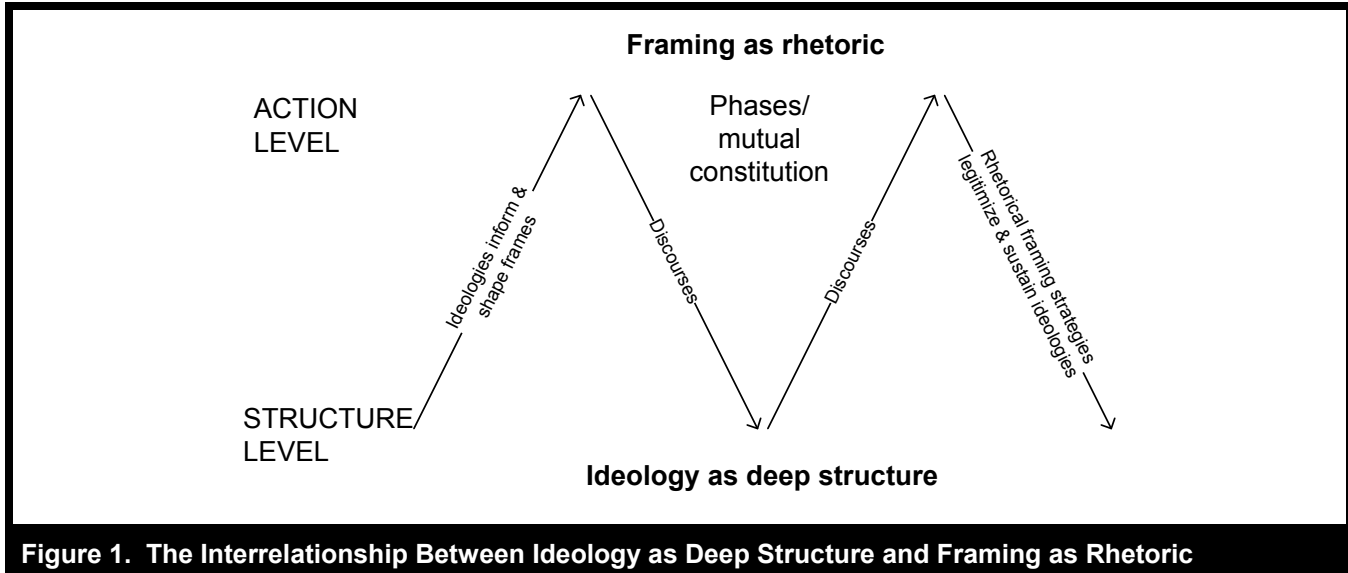
Figure 1. The Interrelationship Between Ideology as Deep Structure and Framing as Rhetoric

It is worth noting that all of the above approaches are encompassed by the field of rhetoric, which, given its instrumental intent, is eminently suited to such an analysis. For our purposes, we employ the concept of framing as a rhetorical strategy (Campbell et al. 1998; Suddaby and Greenwood 2005) for advancing a certain view of technology. As initially suggested by Bateson (1972) and further noted by Scheff (2005, p. 381), a frame can be consciously or unconsciously recognized and represented through words, phrases, or propositions. To frame an issue is to employ certain rhetorical strategies with intent to represent the issue in a certain light and invite others to see it in this light; for example, in positive or negative terms or with certain associations and connotations. Text (the raw material of discourse) can therefore embody frames, which are rooted in ideologies, what Fairclough (1999) refers to as the politics of representation, where actors intentionally employ discourses to their own ends.

As we will demonstrate later with our illustration, computerization movements involve groups that are wedded to certain ideologies about the role of technology in society, acting as deep structures, which are manifested in the framings at the communicative level, employed by their founders and by other members of the movement, and that can be found in a multitude of texts. Our framework, as well as the illustration, shows that we do not have to choose between frames and ideologies; rather frames, as rhetorical features at the surface level of social practices, can be seen as instantiations of ideologies functioning as deep structures. Figure 1 illustrates graphically the relationship between ideology as deep structure, and framing as rhetoric.

The Diffusion of Free/Open Source: Illustrating the Ideological–Rhetorical Approach

Having outlined our theoretical framework, which highlights the ideological as well as framing dimensions of the discourse of computerization movements, we now draw selectively from the narrative on free and open source (F/OS) software in order to illustrate our theoretical approach and its abstract concepts. We chose this illustration as being an important topic area for the IS discipline, and one where much existing research has been published and is thus available for our analysis.

The F/OS Phenomenon

Over the past decade or so, the F/OS phenomenon has revolutionized the ways in which organizations and individuals create, distribute, and use information services. F/OS has spread significantly from being an important part of e-government to becoming part of a number of firms' technology business plans (Fitzgerald 2006). F/OS is an important commercial phenomenon (Feller 2001) involving multiple software development firms and with millions of users depending on the systems. These systems are becoming an increasingly important part of the infrastructure of modern society, and there has been much debate and interest as to what motivates individuals to contribute to F/OS projects; whether it be for ideological commitment or enhancement of reputation (Markus et al. 2000). Researchers have also investigated the processes of F/OS development (e.g., Scacchi

et al. 2006; Stewart et al. 2006) at the software project level, as well as the implications of F/OS from economic and policy perspectives such as the implications of free software for commercial software companies or the implications of intellectual property laws for F/OS (e.g., Lerner and Tirole 2001).

Studies have also focused on the implementation and use of F/OS (Fitzgerald and Kenny 2003), although it has only recently been studied in the IT diffusion literature as a specific type of computerization movement (Dedrick and West 2008; Elliot 2008). There is much room for further theorization and conceptualization. Recent work (Elliott 2008; Elliott and Scacchi 2009) has recognized the free software movement and the open source software movement as important and distinctive types of computerization movement. The distinguishing characteristics of the F/OS movements are the way they represent a change in the economic relationship of a computer technology to its producers and users (Dedrick and West 2008). Further, the technological frame of freedom instantiated in the free software movement, which emerged in the personal computer era has become emboldened in the Internet era (Elliott and Kraemer 2008; Williams 2002).

We drew on our rhetorical approach to illuminate the diffusion of F/OS as an IT related innovation. In so doing, a particular focus has been to highlight different competing discourses (free, open, or proprietary). Table 1 provides an abbreviated list of major events which we selected along with some representative texts that reveal the rhetorical activity of the discourse (Bazerman 1999).This allows us to demonstrate the value of abstract concepts in our rhetorical approach to understanding the IT diffusion process.

Software: To Be Proprietary, Free, or Open?

Gates' Proprietary Challenge to Free Software. In the mid-1970s, a group of hackers and computer hobbyists in Silicon Valley formed the Homebrew Computer Club. In the club's January 31, 1976, newsletter, Bill Gates of (the recently formed) Microsoft wrote an open letter, known as "An Open Letter to Hobbyists" (Gates 1976), to the community where he argued for the relatively new concept of proprietary software. The ethos and practice of computer users at the time was to freely share software with not much thought given to ownership. Proprietary software quickly took off as people were limited by the operating systems available.

Stallman's Counter-Mobilization to Reclaim Free Software. In the late 1970s and early 1980s, Richard Stallman worked at the Massachusetts Institute of Technology's Artificial

Intelligence Lab where his early experiences and challenges of access to source code led to a profound hostility to the idea of intellectual property for software. He became passionate about the right for individuals to alter source code. Stallman set up the GNU project in January 1984 after resigning his job at MIT. The GNU project, a recursive acronym standing for "Gnu's Not Unix," was an endeavor to create a free operating system to replace Unix (which was proprietary). Stallman published the GNU manifesto in March 1985 to ask for participation and support and to explain his philosophy. Many joined the project and his philosophy gave birth to the free software novement (Gay 2002) and shortly thereafter the Free Software Foundation (FSF) was established. The ideology behind free software is a freedom beyond intellectual property rights where software should be shared with everyone. This sharing can then promote cooperating communities who can share and develop software in a free environment. The Foundation's concept of free software was promoted through the metaphor of "free as in freedom, not as in beer." This highlights the defense of freedom as in its wider societal understanding, not just the ideal of promoting software that is free of cost. Further, Stallman's promotion of the "copyleft" principle was not only a clever rhetorical device to indicate opposition to copyright but also reinforced the freedom frame in enabling software to be used, copied, studied, modified, and redistributed as subsequently encoded in the general public license (GPL) established by the FSF. Together, these developments acted as a technological action frame through which individuals were mobilized to become a part of the movement. Further, this freedom theme reflects the ideology at the core of U.S. society, and embedded both in the U.S. constitution and the Bill of Rights through terms such as "freedom of speech." It is this strong belief in freedom and free software, which members share (Elliott 2008), that has been significant in the diffusion of the free software movement.

> Another group has started using the term "open source" to mean something close (but not identical) to "free software." We prefer the term "free software" because, once you have heard it refers to freedom rather than price, it calls to mind freedom. (Elliott 2008, p. 373)

The Birth of Linux and Rhetorical Strategies of Legitimation. In 1991, Linus Torvalds beat Stallman and the FSF to the punch by developing Linux, which was widely adopted by the F/OS community. This early success of Linux was fueled by the Internet, especially due to the development and distribution of the Apache web server (in 1993). Over time, a number of distribution companies developed from the Linux OS, of particular note Red Hat, a star firm on Wall Street in its heyday, which catalyzed the growth and popularity of Linux.

Table 1. Diffusion of F/OSS: Chronology	
Dates	**Major Events**
1976	Bill Gates sends "Open Letter to Hobbyists"
1984	Richard Stallman founds the Free Software Foundation and initiates the GNU project
1991	Linus Torvalds begins development of Linux
1993	Apache WebServer aligns with Internet commercial explosion
1994	Red Hat Inc. catalyzes growth of Linux
1997	Eric S. Raymond wrote and posted "The Cathedral and the Bazaar," championing Linux and its atypical yet successful software engineering approaches
January 1998	Netscape is influenced by "The Cathedral and the Bazaar" and "opens" its Navigator source code
February 1998	The term *open source* challenges and distinguishes itself over *freeware* and *shareware*
November 1998	"Open Source Revolution, Release 1.0" was published and the Open Source Initiative (OSI) formed
August 1999	Linux World Summit exposition opens and Stallman hesitantly accepts the Linus Torvalds Award
2001	Microsoft announces its shared source campaign to combat the Open Source movement
2006	Mozilla and Microsoft collaborate to ensure Firefox's compatibility with Windows Vista
2007	Microsoft launches its open source initiative, outlining their perspective and strategy for OS development

In his widely acclaimed article, "The Cathedral and the Bazaar" (1998) Eric Raymond explained why he felt open source (OS) licenses resulted in higher quality software at lower costs, thereby attracting a wider audience of software developers. Raymond had been a software engineer writing free software for nearly 15 years and was even an early GNU contributor prior to becoming involved with Linux. Raymond presented his observations of the two different styles of software development: (1) closed source/cathedral style (proprietary) and (2) open source/bazaar style (such as Linux). His anthropological analysis centered on what it was that made the OS world work and why the OS approach was able to produce extremely high quality in spite of constantly violating all of the standard rules of software engineering.

Netscape was the first large company to participate in open source and thus was a key player in this movement. Netscape was having trouble with competition, especially Microsoft, and needed to find a new way to remain viable. Raymond's article made a distinct impact on significant people within Netscape, who began to move toward releasing their source code. Frank Heckers, the CEO of Netscape, wrote an internal memorandum (titled "Netscape Source Code as Netscape Product") to make the business case for why they should release their source code or open-source Netscape's code. Netscape announced the release of its source code and the free distribution of its Communicator in 1998.

Open Source's Pragmatic Challenge to Free Software. By the late 1990s, Open Source was established by a subgroup of free software movement advocates. They believed there was a problem associated with the term *free software* as people, and more importantly businesses, associated it with free of charge, cheap and often shabby.   Free software was often associated with the FSF and their attacks on intellectual property. Open Source advocates framed the term free software as not being pragmatic and not meeting the self-interests of a wider set of business audiences. They wanted to represent a more business friendly movement allowing firms or individuals to create either new proprietary or F/OS projects from open source software (Dedrick and West 2008). The proponents of this new movement, Open Source, distinguished themselves from the free software movement and came up with a new term that allowed for the coexistence of free software and non-free software.

> The Open Source Initiative (OSI) is a marketing program for free software. It's a pitch for "free software" on solid pragmatic grounds rather than ideological tub-thumping. The winning substance has not changed, the losing attitude and symbolism have. (Elliott 2008, p. 373)

The OSI was set up as a not-for-profit corporation to promote the OS definition in 1998. After this a number of Microsoft's competitors, including Oracle, IBM, and HP, started offering funding and support for Linux. A key distinction of OSI from the Free Software Foundation is the fact that their software licenses accept OS along with proprietary software while FSF promotes strict adherence to the general public license (GPL)

principles. Despite these differences, some commentators (Elliott 2008) believe that there is a group/shared ideology between FSF and OSI which facilitates the diffusion of F/OS, with a critical mass of organizations and society using F/OSS for personal and business applications.

At one level, the shared beliefs of FSM and OSI form the core of their ideologies, while at another their ambiguity and flexibility are perceived to be critical in the diffusion of F/OS. This ambiguity was dramatized when, at the Linux World Summit in 1999, Stallman was asked to receive an honorary award from Torvalds, and hence to share the stage with him at the awards ceremony. Stallman was hesitant to be on stage with Torvalds, and even in this moment of public rapprochement was keen to distinguish between the FS and OS movements. He noted wryly, "Giving the Linus Torvalds award to the Free Software Foundation is sort of like giving the Han Solo award to the Rebel Fleet."

Despite the tension and ideological differences between the two movements, their shared opposition to big businesses like Microsoft united them in working together and reinforcing their ideology (Elliott 2008). In essence, the FSS and OSS movements have a dialectical relationship that reflects their interdependence as well as the internal tension between them (Berry 2004; Ekbia and Gasser 2008).

Gradual Pragmatic Embrace of OS Even by Microsoft. Increasingly many companies started to mix or allow the co-existence of open source and proprietary codes, while others placed some of their proprietary code into the open source community. IBM and a number of other large companies embraced and actively promoted the open source movement, especially Linux. Additionally, increasing numbers of local and state governments in America and elsewhere have turned to open source software.

Microsoft has been the main antagonist of the open source movement and at one point had placed Linux and non-commercial software at the top of a list of "key business risks." They reacted to OS by cutting prices and sought to combat the movement by mimicking them with their own shared source campaign, opening up portions of their code for inspection. They also launched a major publicity campaign asserting that the cost of retraining and support by switching to Linux and open-source application was in fact more expensive for large firms than sticking with Windows. Despite these early shows of resistance, Microsoft gradually followed suit with its own pragmatic embrace of OS. They collaborated with Mozilla in 2006 to ensure Firefox's compatibility with Windows Vista and by 2007 had bowed more fully to pressure by launching their open source initiative and outlining their own OS development methodology strategy.

Rhetorical Approach to Understanding F/OS Diffusion ▬▬▬▬▬▬

In this section we draw on our rhetorical approach to illuminate the diffusion of F/OS as the dynamic interrelationship between ideology and framing.

Recognizing Ideologies as Deep Structures in F/OS Texts

The free software movement sought to improve social order through "freedom in software," something frequently stated by Stallman (in *Revolution OS*, 2001):

> Free software refers not to price but to freedom… free speech not free beer…the freedoms that I'm talking about are the freedoms to make changes if you want to…to share with other people and to make improvements.

He further articulates the importance of these freedoms for building community:

> And those are the freedoms that distinguish free software from non-free software. These are the freedoms that enable people to form a community. If you don't have all these freedoms you're being divided and dominated by somebody.

These ideological aims and means have remained remarkably consistent over time, and are expressed through homogenous central themes in the movement's rhetoric. In addition to these central themes, other themes such as sharing, society, ethics, and values become prominent at different times, but always act in the service of expressing the ideology as a deep structure that remains remarkably stable and consistent throughout.

F/OS Diffusion as Interplay Between Ideology and Framing

The diffusion of F/OS can be understood by not only examining ideology as deep structure but in the interplay with framing at the communicative level of rhetoric across the free, proprietary, and open source software movements. Table 2 illustrates, for each movement, ideology as deep structure, the surface, communicative level of rhetoric as framing, key audiences, and the level of diffusion.

Table 2. Ideological–Framing Relationship Across Software Movements			
	Free Software Movement	**Proprietary Movement**	**Open Source Movement**
Ideological goals and means; ideology as underlying deep structure	*Improved social order through* • Freedom in software • Building community	*Intellectual property belief system instituted through* • All creative ideas and work belonging to the creator • If others use work without permission or recognition, they should be punished	*Improved technology and social order through* • All users sharing open source software • Open communication, standards, and computing • High quality technology
Framing as rhetoric; the surface, communicative expression of ideology	• Uses philosophical and ethical rhetoric • Primarily uses ethos and pathos appeals **Frame:** Freedom and sharing of information before money and commercialization	• Uses pragmatic rhetoric primarily but also pathos • Predominantly uses logos and now ethos appeals **Frame:** Intellectual property is valuable and should be paid for	• Uses pragmatic, techno-logical, and marketing rhetoric • Primarily uses logos appeals **Frame:** Involving collective knowledge in the production of technology results in higher quality software and a better society
Diffusion	*Limited* • Predominantly computer hobbyists	*Widespread* • Mix of end-users and businesses	*Widespread* • Furthered by Linux success • Businesses and hobbyists
Audience	• Computer interest groups	• Computer end-users • Businesses • Governments	• Computer interest groups • Businesses • Governments

The FSM Movement.   Within FSM texts, the rhetorical justifications employed are pathos and ethos types with a more recent focus on ethos justifications which emphasize moral legitimacy. The quote below (from *Revolution OS*, 2001) is typical of Stallman's rhetoric, which blends an emotional appeal for freedom with socially accepted appeals for moral legitimacy concerning "the right thing to do":

> The developers of those systems didn't share with other people; instead they tried to control the user, dominate the users, restrict them… .When I went to school the teachers were trying to teach us to share…but now the administration says teachers should be teaching kids to say yes to licensing, if you bring some software to school – "Oh no don't share it! Sharing means you're a pirate, sharing means you'll be put in jail" – that's not the way society should work.

Stallman also used his personal charisma and ethical/moral persuasion in a large number of interviews and lectures over a couple of decades to appeal to the emotions of his targeted audiences. In addition, he demonstrated clever playfulness in developing rhetorical concepts and discourses to mobilize support for his ideology among computer hobbyists and the general public on the Internet. For example, he developed rhetorical concepts copyleft, GNU, and the general public license (GPL), which were ingenious and effective.

> The idea of copyleft is that it's copyright flipped over – we say "this software is copyrighted, and we the authors give you permission to redistribute copies, we give you permission to change it, we give you permission to add to it."

> GNU, which stands for Gnu's Not Unix, is the name for the complete Unix-compatible software system which I am writing so that I can give it away free to everyone who can use it…."The whole GNU project is really one big hack. It's one big act of subversive playful cleverness to change society for the better because I'm only interested in changing it for the better. But in a clever way." (R. Stallman in *Revolution OS*, 2001)

The Proprietary Movement. In contrast, the ideology of the proprietary Microsoft (MS) movement constituted an intellectual property (IP) belief system, which highlighted the ownership of creative ideas and work as belonging to the creator and safeguarded from others through IP rights. The primary type of rhetorical justification by the MS movement was a logos appeal by Bill Gates (in his "Open Letter"), which emphasized pragmatic legitimacy:

> Who can afford to do professional work for nothing? What hobbyist can put three man years into programming, finding all bugs, documenting his product and distribute it for free?

These rational arguments were backed up with pathos justifications in the early stages:

> As the majority of hobbyists must be aware, most of you steal your software…who cares if the people who worked on it get paid? Is this fair?

These rhetorical justifications underpinning the framing strategies along with the IP-based ideology addressed the self-interests of a wide set of audiences including end users, businesses, and governments. This, along with strong marketing and business strategies, successfully allowed Microsoft to develop structures of domination in the field. Through this competing discourse, they have over time achieved cognitive legitimacy with high levels of diffusion, what might be termed as a counter computerization movement (Elliott and Kramer 2008). In more recent years, Gates has sought to employ ethos appeals through collaborating with leading open source organizations and the open source community, as well as through instituting the Bill and Melinda Gates foundation to address pressing social concerns through the resources accumulated on the basis of proprietary software.

The Open Source Movement. Finally, while the OS movement shared a number of the deep structures of freedom (e.g., access to source code) inherent in the FS movement, they favored a pragmatic turn to the ideological view of freedom in society as noted by the founder, Linus Torvalds: "There are relationships to GNU on multiple levels. One is just the philosophical level of thinking that making your source code open is a good idea."

Torvalds was careful to differentiate himself as "the engineer," focused on high quality technical development, from Richard Stallman, the "philosopher." With the introduction of new rhetorical concepts and justifications developed by OS, internal tensions developed with FS movements, which perceived OS to challenge FSM's power and domina-

tion. There were differing views as to the extent to which FS and OS shared ideologies. Whether these differences merely constituted a deep ideological shift or occurred at the level of rhetorical framing was debated. On one hand, the deep structure of FS ideology and its rhetorical concepts were perceived to guide the deep structures of the OS, as the head of the OS Foundation suggested: "The GPL is unique in that it's not just a license it's a whole philosophy that I think motivated the open source definition" (B. Perens in *Revolution OS*, 2001).

Open source movement entrepreneurs also highlighted their shared commitment with the FSM to freedom as a deep ideological structure (versus a freedom frame) but with differences at the surface level of framing around the coexistence of free and proprietary, and commercialization. This more pragmatic, technological, and marketing focus of Open Source additionally incorporates logos justifications in the surface level framing strategies so as to enroll a wider set of business and government audiences. The Open Source definition and licenses would accommodate both proprietary and free software of high quality and were, therefore, promoted as a more commercial and business friendly movement:

> I don't feel I have any philosophical differences, me as author of the Open Source definition, and he [Richard Stallman] as originator of Free Software as an organized thing except for one thing. Richard wants all software to be free, and I think that free software and non-free software should co-exist. That's the only difference we have.
>
> I think some of the people in the free software camp are a little scared by the commercialization...I think commercialization is very important, we want to mainstream this software. (B. Perens in *Revolution OS*, 2001)

The discursive shift from free to open software represented a deliberate change in argument structure which at one level gave cognitive legitimacy or taken-for-grantedness by colonizing elements of free and rhetorically framing it as open and translating its meaning to attract a wider set of audiences. As a key proponent of OS and the OS Foundation explained,

> So Eric Raymond knew there was a problem. We'd been calling this "free software" but people took the term "free" and associated it with free of charge, they thought that you couldn't make money, that you couldn't sell, which is exactly the wrong concept. We wanted to get across the idea that the software

was open and that the source code was available. (L. Augustin in *Revolution OS*, 2001)

On the other hand, the FSF challenged the sharedness of the ideology with OSS. They suggested that the focus on being open rather than free in fact represented a distinctive ideology that was potentially harmful and distracting key audiences away from FSF's deep ideological beliefs. In particular, Stallman emphasized the risk of OS's pragmatic embrace as demoting the emphasis on moral legitimacy at the societal level. He spared no opportunity to differentiate FS from OS through ethos appeals aimed at mobilizing and sustaining his loyal audiences. In so doing, Stallman aimed to protect against threats to the domination that the free software movement traditionally enjoyed:

> The reason why my views are different, why I'm in the Free Software Movement rather than the Open Source movement, is that I believe that there's something more important at stake. That freedom to cooperate with other people, freedom to have a community is important for our quality of life, it's important for having a good society that we can live in and that that is in my view even more important than having powerful and reliable software. (R. Stallman in *Revolution OS*, 2001)

Despite these challenges concerning their shared ideology, the shared opposition offered by both the FS and OS movements to proprietary movements was pivotal in the development of the OS movement and its subsequent growth. For example, the power struggle between Netscape and Microsoft in the server market prompted Netscape to invest in open source and was critical in its early stages of the OS development. This built on and strengthened the moral legitimacy and ethos appeals for protecting the Internet as a social good against the threat of a monopoly lock by Microsoft.

> The real problem was that they feared that Microsoft would achieve a monopoly lock on the browser market and they would then use that monopoly lock to pervert, actually, the http and html standards that the web depends on and once they had turned those standards into lock-in devices they could then use that control to drive Netscape out of the server market which was where it was making its real money. (E. Raymond in *Revolution OS*, 2001)

This shared opposition grew as other large companies such as Oracle and IBM threw their support behind OS as a form of pragmatic embrace (Fitzgerald 2006). The seeming contradiction between "shared opposition" and "shared ideology"

led to ambiguity and persistent tensions between the two movements. FSM perceived OS as being involved in a double play, their shift in ideology and framing not only increasing pragmatic legitimacy but in the process wresting power and domination from the FSF as being the voice of nonproprietary software. The FSM deemed OS's conjoining of open and proprietary software to be an unholy alliance and rather hesitantly if not resentfully grew to acknowledge that despite possible differences in ideologies they had a shared opposition to the Microsoft proprietary movement. The open source movement's recombining and mobilizing of FSM arguments was perceived to offer benefits of overall higher levels of nonproprietary software. This was seen as a consequence of the successful enrollment of business and government audiences at the expense of diluting and supplanting some of FSM's core ideological beliefs and threatening their loyal base of support.

However OS was not the only one guilty of such recombinations of arguments and rhetorical concepts for their own self-interest. There were also tensions and irritations from the OS camp, which perceived the FSM to be colonizing Linux by cleverly (re)combining it with GNU:

> I think its justified, but its justified if you make a GNU distribution of Linux, the same way that I think that Redhat Linux is fine, or Suzo Linux or Debian Linux, because if you actually make your own distribution of Linux you get to name the thing. But, calling Linux in general a GNU/Linux is just ridiculous. (L. Torvalds in *Revolution OS*, 2001)

In recent years, the socially accepted norm of an open business logic has challenged the moral legitimacy of a proprietary software ideology. Microsoft has responded by building bridges and collaborating with leading open source companies and the open source community, which involved a change in rhetorical framing yet at the same time deftly reinforced its stable ideology. Additionally, and as mentioned earlier, Bill Gates, as the founding movement entrepreneur of proprietary software, strengthened its moral legitimacy through ethos appeals by establishing the Bill and Melinda Gates Foundation to recognize broader societal concerns. These ethos justifications are also hoped to sustain cognitive legitimacy and the widespread diffusion of proprietary software.

Discussion

Our key contribution is to develop a rhetorical approach that theorizes the interrelationship between two central elements

of computerization movements, namely framing and ideology, to better understand the dynamics of diffusion of IT-related innovations. We illustrated our theoretical developments using the familiar narrative of F/OS diffusion to highlight deep structures underlying ideology as well as the rhetorical justifications inherent in the framing strategies of different movement advocates. Below we suggest ways in which our rhetorical developments advance our understanding in a number of areas, namely the role of rhetorical justifications for framing strategies, reconceptualizing ideology within CM theory, and how rhetoric can elaborate organizing visions. We then highlight the added value of our rhetorical approach versus traditional IT diffusion theory. Finally, we briefly discuss possible uses of our theory in the IS field in the future.

On Rhetorical Justifications for Framing in CM Theory

Our rhetorical approach builds on recent discourse perspectives, emphasizing changes in argument structures in IT implementation and diffusion (Allen 2008; Heracleous and Barrett 2001), by integrating and extending key insights on rhetorical justifications from parallel, unconnected literature streams on discourse and institutions (Green 2004; Green et al. 2009; Phillips et al. 2004; Suddaby and Greenwood 2005). Specifically, we increase our understanding of the types and sequences of rhetorical justifications (Green 2004) which facilitate the production and acquisition of different forms of legitimacy. For example, our illustration suggests that where a proprietary movement starts with pathos, followed by logos, and ultimately includes ethos justifications that appeal to the self-interests of a wide set of audiences, high levels of diffusion may likely follow. In such a case, a reduced argument structure develops over time as cognitive legitimacy sets in. However, this case is always open to challenge and, as we saw with Microsoft, a dominant proprietary movement may need to pragmatically embrace rhetorical framing strategies, over time, to build moral legitimacy in defending existing high levels of cognitive legitimacy and diffusion.

In contrast, the diffusion of F/OS by a movement with a competing discourse may be supported by pathos and ethos rhetorical justifications and, over time, related arguments may develop that focus on emotive appeal and moral legitimacy. Further, it may be expected that, where the movement entrepreneur's arguments address the self-interests of a limited audience, this can lead to a loyal yet small base of support, with potentially low levels of diffusion. Further, the gradual evolution of a movement suggests that where a technological action frame of a CM becomes embedded in wider sets of discourses and becomes increasingly taken for granted, new

movement entrepreneurs may emerge that strategically graft on rhetorical justifications to achieve pragmatic legitimacy in a bid to enroll a wider set of audiences. This *strategic grafting* by a new movement entrepreneur can be built on earlier efforts of a sister movement with similar ideologies but very different framing strategies to achieve pragmatic legitimacy by appealing to new audiences such as businesses and government. Where such a discourse coalition between different movement entrepreneurs (in our case between OS and FS movements) becomes dominant, increased levels of diffusion can result.

This evolution toward the coexistence of movements with shared (if contested) ideologies and different framing strategies is, however, a precarious affair, which could lead to a different diffusion outcome. Latour's (1987) "captation" positioning strategy is helpful in understanding these dynamics. This positioning strategy refers to the difficulty faced by movement entrepreneurs in their translation strategies to know "how to leave someone completely free and have them at the same time completely obedient…to lay out text so that wherever the reader is there is only one way to go" (p. 57). At the same time, Latour further argues that "the simplest way to spread a claim is to leave a margin of negotiation to each of the actors to transform it as s/he sees fit and to adapt it to local circumstances" (p. 208). But the challenge for earlier movement entrepreneurs (e.g., FSM) is in determining how best to provide a margin of negotiation to later movement entrepreneurs (e.g., OS) in translating their contribution, while simultaneously retaining subtle control. This is necessary if the contribution (e.g., of free) is not to be lost but rather remain recognizable despite modification through translation (e.g., open) by later activists. Careful consideration of the audiences (how and by whom it should be read) is necessary in this positioning strategy.

These arguments suggest that the extent of diffusion is contingent on the ensuing structural contradiction and struggle over meaning structures between different movement entrepreneurs (OS, proprietary, free) in the service of power relations (Thompson 1990). Where overt conflict does take place, the resulting confusion undermines the sustainability of the original rhetorical justifications and framing strategies, subsequently leading to reduced levels of diffusion among a more limited set of audiences. Finally, where a discourse coalition between movements (free and OS) becomes dominant and stands for shared opposition to, say, a dominant proprietary movement actor in the field, these actors may likely revise the rhetorical justifications underpinning their framing strategies over time. In the process as our illustration suggested they may shore up moral legitimacy to protect or further enhance existing levels of CM diffusion.

Reconceptualizing Ideology in CM Theory

In proposing how CM's should be reconceptualized, Hara and Rosenbaum (2008) note that there are different ideologies at the center of CM in addition to the technologically utopian ones, which are often prescribed as promoting positive social visions of technology use (Iacono and Kling 1996; Kling and Iacono 1988, 1994, 1995). As Allen (2008) observed from his study of PDAs, a single CM ideology may not be equally influential across an industry or community of users, and is, therefore, not circumscribed in a static manner by key basic assumptions. In reconceptualizing ideology within CM diffusion we have drawn on a dynamic, interactional approach to recognize multiple actors and their ideologies as constituting meaning structures that crucially serve to (re)produce power relations and structures of domination. Consistent with Kling and Iacono's (1988) earlier work, ideologies are located at the deep structural level; however, we highlight additionally that these both shape and can be gradually shaped by framing strategies of actors. Further, a sequence of different types of rhetorical justifications underpin these framing strategies, which may change over time across emerging movement activists who seek to widen their appeal to different audiences and establish different forms of legitimacy.

Such an emphasis on rhetoric highlights that activists and movement entrepreneurs play an active role of agency in the diffusion process (Allen 2008; Green 2004), and adds a dynamic ideology-framing approach to the study of CM diffusion to understand F/OSS diffusion (Elliott 2008). Further, we also contribute a deeper understanding of the dynamics of competing discourses in CM as reflecting underlying deep structures of ideology and rhetorical framing strategies. These play out as power struggles over time and involve reframing strategies for (re)establishing legitimacy.

On Rhetoric and Organizing Vision Theory

Our rhetorical approach also adds to the emerging literature on organizing visions (Swanson and Ramiller 1997, 2004). By highlighting the potential *dissensus* that can emerge between different movement entrepreneurs in the focal community of the IT related innovation, our theorization shifts the focus from examining the different interests of multiple stakeholders (e.g., vendors, media) forming around the development of an organizing vision to broader competing discourses between different organizing visions that emerge in the wider context of the field. Our work builds on, and expands theoretically, our understanding as to how competing discourses around organizing visions influence the diffusion of IT-related innovations. Our focus at this broader field level of analysis examines not only the legitimacy of the IT innovation (Swanson and Ramiller 1997, 2004) but how rhetorical justifications/claims of movement entrepreneurs have concomitant forms of legitimacy (e.g., moral or pragmatic). Further, while the emphasis with the organizing vision is on mobilizing that vision to help industry actors to engage with the innovation, our perspective emphasizes the mobilizing strategies of movement entrepreneurs to shape alternative visions stemming from underlying ideologies and framing strategies which may lead to power struggles by actors who engage with different visions, the potential fragmentation of the field having significant effect on the diffusion of the IT related innovation.

Our Rhetorical Approach Versus Traditional IT Diffusion Theory

Our rhetorical approach to understanding IT diffusion provides three types of added value, over and above traditional diffusion analyses. First, it provides an extended and enhanced conceptual toolbox for understanding IT diffusion. Second, it brings in a more active, nuanced conception of agency. Third, it provides a more pragmatic explanation of outcomes where the map (the theoretical explanation) matches the territory (diffusion outcomes) more closely than in traditional diffusion approaches. Table 3 outlines our arguments:

First, our approach connects naturally and incorporates insights from social theory, interpretive sociology, and related domains such as politics, linguistics, and rhetoric, that traditional rationalist approaches would find rather incompatible or for which they would not adequately account. These links extend the theoretical landscape we have available, that can help us interpret and understand agents' motivations for observable actions in the diffusion process. These theoretical perspectives provide important new ways for analyzing dynamics and revealing compatibilities as well as tensions among discourses. These competing discourses enshrine ideologies that are manifested as rhetorical framings and shape action, but also go well beyond technological aspects, to incorporate ideals, interests, and power. Control of successful software technologies is intimately connected with economic interests, as well as power and influence at the level of not only local and national economies but also at the level of nation states. The discourses that support and perpetuate this control also perpetuate these ingrained economic and political interests. In addition to discursive dynamics, our analysis can provide insights to intergroup dynamics (for example, the interactions of advocates of free/open source/proprietary movements), by revealing both shared as well as conflicting elements of their ideologies and providing more clarity on

Table 3. Traditional IT Diffusion Theory Versus Our Rhetorical Approach		
Domains	**Traditional Diffusion Theory**	**Ideological/Rhetorical Approach**
Conceptual toolbox for understanding IT diffusion	Based on technology characteristics and innate user psychological characteristics.	Incorporates concepts from social theory and related domains to provide insights on discursive deep structures and dynamics.
Conception of agency in context of IT diffusion	Narrow conception of agency, with attention to how agents view technological characteristics. Agents take technology as a given and decide whether to adopt it or not based on rational analysis.	Active, deeper conception of agency that brings interests, power, and ideologies back in the analysis, providing insights on the why and how of diffusion. Agents are proactive in framing how technologies should be interpreted by others, drawing on deep-seated ideologies.
Explanation of outcome of IT diffusion	Partial explanation of outcomes based on focus of traditional diffusion theory on rational analysis of technological features and adopter characteristics.	More accurate and holistic explanation of outcomes taking into account ideologies, interests, power, and emotion. Map has closer resemblance to the territory.

why they take certain actions (or inactions) which ultimately shape IT diffusion. Traditional diffusion approaches that focus on technological and innate psychological characteristics of adopters would miss much of these dynamics and would provide only a partial explanation of the outcomes of these dynamics.

Second, traditional diffusion theories take into account agency only in so far as it relates to innate characteristics of agents, or how they view the technological aspects of new technologies. While these are relevant factors, they do not go far enough in terms of incorporating other fundamental elements of agency such as how shared ideologies and interests affect interpretations and actions of institutional entrepreneurs as well as technology adopters more broadly. Our approach aims to capture both the nature and effects of these ideologies, as well as the intentionality of agents in shaping diffusion through the active employment of supportive or competing discourses. It also enables us to understand the *how* of social influence (through rhetorical framing) and the *why* of underlying actions of institutional entrepreneurs and adopters (related to shared ideologies). It allows us to go beyond the explicit arguments to look for more persistent, deeper structures that guide these arguments. Technologies are interpreted and appropriated (or rejected) not simply on their technological merits but through the effects of such deep structures encompassed in ideological discourses of various actors. Our approach, therefore, entails a more active and nuanced notion of agency as compared to the more stylized, static notion of agency assumed by traditional diffusion approaches, enabling us to gain a better understanding of dynamics and outcomes.

Third, as a result of the above issues and themes, a rhetorical approach can explain both process and outcomes of diffusion in a more pragmatic and robust fashion than traditional IS approaches, resulting in a closer match between the map of theoretical explanatory power and the territory of IT diffusion. It may be asked, why do many technically superior technologies fail to diffuse significantly whereas subsequent versions (which may have less advanced technical specifications, but are also associated with a different market image and with social movement elements) are successful in doing so? For example, Apple's iPod wasn't the first MP3 player on the market, and neither was it the most technically sophisticated. Indeed, it employed fewer but perhaps more desirable elements of the overall technology. Nevertheless, its diffusion has been extensive, largely because its framing, underpinned by the founder's ideology, is linked closely with adopters' ideal self in the context of a social movement-like adoption process. This highlights the question as to why technologies with high promise of increasing organizational efficiency are resisted by agents, despite strong logical arguments for their adoption, leading to failed implementation efforts that result in years of wasted effort and astronomical expenditures. An analysis of the relevant frames manifested in rhetoric can help us bring nonrational, interest-related, emotional factors into such understanding, in this way gaining insights on why agents acted as they did, insights that go beyond what traditional IT diffusion theory can provide.

Our illustration of the discursive dynamics between the free, open source and proprietary movements shows us that to understand why institutional entrepreneurs as well as organizations took certain actions and promoted certain ideals that

significantly shaped the levels of diffusion, we have to understand their ideologies and motivations, as reflected in their rhetorical framings over time. We also have to understand how the ideologies enshrined in rhetorical framings interacted with, and threatened, commercial interests (free/open source versus proprietary software), in this way bringing power and institutionalized interests back in the analysis. A traditional focus on technological specifications or innate psychological characteristics of adopters would only tell a limited part of the story, and, we contend, not even the most important part of the story, in the sense that such factors are often not even the major reasons for low levels of diffusion and ineffective institutionalization of these technologies. As Bazerman (1999) highlights, an innovation did "not just appear through the mute work of a few mute technologists…it had to emerge as the drama of human meanings" (p. 2). Some of the major influences are undoubtedly driven by ideas and ideals in addition to communicative discourse and rhetorical activity. We can understand what these are, and their effects, by studying rhetorical framing as a manifestation of ideologies embedded in discourse.

We hope that other researchers may find our rhetorical perspective a useful complement to alternative approaches in examining the diffusion of IT related innovations across different sectors. For example, we believe our rhetorical approach is very timely for exploring the diffusion of social media. By its very nature, social media is concerned with the changing interactions and dialogues between firms and customers now made possible by the explosion of information via communication paths that did not exist a few years ago (Gallaugher and Ransbotham 2010). As these all involve enhanced networks of communication and persuasion, social media represents an excellent fit with a rhetorical approach to the study of its diffusion (Roundtree et al. 2011).

Further, as we argued above, software technologies are intimately related with economic and political interests; the discourses that support such technologies by implication perpetuate and protect such interests. Discursive contests are not merely disagreements over philosophies and ideas, they are disagreements over social and economic configurations. Further research can explore these economic and political dimensions more explicitly in relation to the diffusion of technological innovations, and the discursive argumentations and justifications accompanying them.

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