Organizational Change as an Infective Process

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ABSTRACT

This paper proposes that organizational change can be understood as an infective process in which new conversations are introduced into an already existing network of conversations. Where these new conversations are sufficiently infective, they propagate, producing new actions, behaviors, and practices in the organization. In successful changes, these new conversations become endemic within the organization. However, where there is sufficient conversational immunity, new conversations are unable to establish themselves and there is no significant alteration in the organization. Factors that contribute to the infectivity of conversations and the implications of this perspective to the conduct of change are presented.

Key Words: change, conversations, infective

What might be the implications for organizational change management if we consider organizations as discursive entities? Although organizational change has been considered in the context of narrative (Czarniawska, 1997), stories (Boje, 1991; Boje, 1995), and conversations (Ford & Ford, 1995), the implications for managing and producing change within a discursive context are still in the nascent stage. Drawing on the literatures of memetics (Dawkins, 1989; Dawkins, 1996; Dennett, 1991; Lynch, 1996), cultural evolution (Cavalli-Sforza & Feldman, 1981; Dennett, 1995; Durham, 1991), and epidemiology (Mausner & Kramer, 1985; Rothman, 1986), this paper explores change as an infective process in which new conversations are introduced into an already existing network of conversations. Where these new conversations are sufficiently infective, they multiply and spread, producing different actions, behaviors, and practices in the organization. However, where there is sufficient conversational immunity, new conversations are unable to establish themselves and die.

The intent of this paper is to raise questions and ideas in order to open new avenues for possible research into organizational change within the emerging discursive literature on organizations. By considering change as an infective, conversational process, attention shifts to the nature of infective conversations and factors that influence their spread. Such a focus also opens new understandings for why change works as is does.

This paper is meant to be an opening in the possible application of infective processes, particularly epidemiology, for the study of organizational change. As such, it tends to be speculative and tentative, rather than definitive.

Conversations

At the most basic level, conversations are "what is said and listened to" between people. A broader view of conversations as "a complex, information-rich mix of auditory, visual, olfactory and tactile events" (Cappella, 1985), includes not only what is spoken, but the full conversational apparatus of symbols, artifacts, theatrics, etc. that are used in conjunction with or as substitutes for what is spoken. In this respect, conversations are the sum total of communicative relations in action in which language, body, and emotion are inextricably linked (Broekstra, 1998). The speaking and listening that goes on between and among people and their many forms of expression in talking, singing, dancing, etc. may all be understood as "conversation". Facial expressions and body movements, with or without the use of instruments or tools, constitute speaking. Similarly, listening is more than hearing, and includes all the ways in which people become aware and conscious of, or present to the world.

Conversations can range from a single speech acts, e.g., "Do it", to an extensive network of speech acts which constitute arguments (Reike & Sillars, 1984), narratives (Fisher, 1987), and other forms of discourse (e.g., Boje, 1991; Thachankary, 1992). Conversations may be monologues or dialogues and may occur in the few seconds it takes to complete an utterance, or may unfold over an extended period of time lasting centuries, e.g., religion. A single conversation may also include different people over

time, as is the case with the socialization of entry people in an organization (Wanous, 1992).

Conversations are populated and constituted to varying degrees by words and phrases that others have said before us and by our own sayings and ways of saying (Bakhtin, 1986). As Bakhtin (1986, p. 86) points our, "our speech is filled with others' words … which we assimilate, rework, and reaccentuate." Conversations, therefore, are social transmissions through time and space that are and can be connected to one another. When we are asked to justify or explain our linguistic characterizations (what we say), we respond with other linguistic characterizations which are themselves based in or reference still other linguistic characterizations and so on (Searle, 1969). In this way, we create an interconnectedness or intertextuality (Spivey, 1997) among conversations that brings both history and future into present utterances by responding to, reaccentuating, and reworking past conversations while anticipating and shaping possible subsequent conversations.

Conversations, therefore, are not only the process of social transmission, they are also the product of that transmission. And, it is the accumulated mass of continuity and consistency in the intertextuality of conversations that constitute, maintain, and objectify organizations (Berger & Luckmann, 1966; Berquist, 1993; Watzlawick, 1990). As a result, organizations exist in the network of words, phrases, and sentences that have been combined to create descriptions, reports, explanations, understandings etc., that in turn create what is described, reported, explained, understood, etc. And, it is through the transmission of these conversations that organizations persist and change.

Organizations as Networks of Conversations

Organizations do not simply have conversations, they *are* conversations. More specifically, they are networks of conversations. For example, planning, budgeting, hiring, firing, promoting, managing, rewarding, etc. are all "macro conversations" that are interconnected and constitutive of organizations and which are themselves constituted by different "micro conversations". Organizations are not discursively monolithic, but pluralistic and polyphonic with many conversations occurring simultaneously, sequentially, and recurrently (Fairclough, 1992; Hazen, 1993) within and as the context of other conversations. These conversations, in turn, establish the context in which people act and thereby set the stage for what will and will not be done (Berquist, 1993; Schrage, 1989).

Organizations, therefore, exist neither as objective entities nor as meanings people carry around in their heads, but in the conversations for, about, and around a limited number of matters in a few physical places and with the particular people usually encountered there. Some of these conversations engender commitments that are fulfilled through special networks of recurrent conversations in which only certain details of content differentiate one conversation from another (Winograd & Flores, 1987).

Recurrent conversations are particularly interesting because they become embodied in the offices and departments that specialize in fulfilling some part of the

engendered commitments and become background conversations for other departments that are not part of the fulfillment, but simply utilize the recurrent conversations (Winograd & Flores, 1987). For example, recurrent requests for travel reimbursements create a relatively predictable pattern of recurrent conversations called "travel reimbursement" which include all attendant forms and protocols. Although other departments may not be engaged in fulfilling "travel reimbursements", they nevertheless may refer to, use, or in some other way rely on or refer to these conversations in their own conversations.

Recurrent conversations contribute to structural coupling between organizational participants in which people are habituated to (Berger & Luckmann, 1966) or naturalized in (Fairclough, 1995) the conversations that connect them and work to maintain the coupling in the face of environmental perturbation (Maturana & Varela, 1987). Structural coupling holds conversations in place and contributes to the persistence of existing conversations and orders of discourse. Orders of discourse refer to the ordered set of discursive practices between individuals and groups within a particular organization such as informal conversations, one-on-one meetings, formal presentations, etc. (Fairclough, 1992).

What we come to know as an "organization" therefore, is a conversation that is itself the result of who has conversations with whom, about what, when, and where (Broekstra, 1998). Some conversations, because they occur between certain people (e.g., CEO and CFO), about particular subjects (e.g., downsizing), in certain places (e.g., board room), and at specific times (e.g., all day meeting), precipitate a particular set of conversations and lead to something happening, e.g., change. Other conversations, however, even though they may be about the same subject (e.g., downsizing) lead nowhere because they are between the "wrong" people, at the "wrong" time, or in the "wrong" place (Hardy, et al., 1998). But all of these conversations constitute the network of conversations we call an "organization" and provide the context in which change occurs.

Infective Processes

As networks of conversations, organizations are not static things, but dynamic interdependent networks of structurally coupled conversations that are transmitted and retransmitted through time. Within this context, producing change involves some process of transmission in which new conversations are introduced, spread, and become structurally coupled, creating a new recurrent conversations and network. In this respect, producing change is akin to introducing and spreading an infectious disease within a population, e.g., creating an epidemic, that results in a new, chronic condition. This similarity suggests that epidemiology may be a rich source for understanding the dynamics of change (Cavalli-Sforza & Feldman, 1981).

Epidemiology is the systematic study of the pattern and frequency of disease or injury within a population and the factors that influence that pattern (Ewald, 1994; Mausner & Kramer, 1985). At the heart of epidemiology is the presupposition that the occurrence of disease and injury is not randomly distributed throughout a community, but

is the result of systematic differences among subgroups that effects their exposure and susceptibility to infectious or harmful agents. Furthermore, it is assumed that these differences can be identified and the knowledge gained used to establish programs of prevention and control.

Epidemiologists contend that the pattern, frequency, and severity of disease and injury within a community can not be attributed to the presence of only one factor. Rather, disease is a function of the interaction among three factors: agent, host, and environment (Ewald, 1994; Mausner & Kramer, 1985). An alteration in any one of these components can alter the equilibrium among all of them such that there is an increase or decrease in the frequency of disease or injury.

Infective Agents

Agents are typically considered to be the biological, chemical, or physical entities that *must* be present for disease or injury to occur. For example, HIV is the biological agent of AIDS, lead is the chemical agent of lead poisoning, and a club is the physical agent of a blow to the head. In the spread of infectious diseases, agents are the entities that are transmitted and "infect" their hosts. Infect comes from the Latin word "in facere" meaning to put in. To infect someone, therefore, means to induce something into their system. Where this induction is successful <u>and</u> the agent establishes itself in the host, i.e., the agent "takes", an infection and disease result.

Infection and disease (illness) are not the same. Infection refers to the presence of an infective agent in a host. Disease, on the other hand, refers to the effects or symptoms produced by an infection. Fevers, chills, vomiting, headaches, etc. are all symptoms of an infection that is sufficient to bring about changes in the host. These changes may be physiological as well as emotional (Ewald, 1994; Hatfield, et al., 1994).

Differences in disease severity make it possible to distinguish among levels or stages of disease (Mausner & Kramer, 1985). At the lowest level is exposure in which no disease has developed, but the groundwork for it has been laid. The host may or may not have been exposed to the agent, and the host may even be infected, but the infection has not reached a stage where it is detectable or symptomatic.

In the pre-clinical stage, there are no observable (i.e., clinical) reactions or symptoms in the host, but the presence of the infection can be detected through screening tests. The clinical stage occurs when there are recognizable and overt symptoms or evidence of infection. The final stage, disability, refers to any diminished capacity suffered by the host as a result of the disease. This disability may be relatively minor, as in a skin blemish, or severe, as in paralysis or death. In the case of organizational change, we are not interested in disability, but with the incorporation of new conversations into the network of conversations. For this reason, we replace "disability" with "adoption", "incorporation", or "structurally coupled".

Infectivity.   The ability of an agent to successfully enter and establish itself within a host, i.e., to produce an infection, defines the agent's infectivity (Mausner &

Kramer, 1985). The easier it is for an agent to "get in", to overcome host immunity, the more infective the agent is said to be. One way to think of infectivity is in terms of the quantity of agent that is required to produce an infection in a host. The smaller the quantity required, the higher the agent's infectivity. In a conversational context, infectivity could be evidenced by the amount that has to be said before someone "gets it".

There are two aspects of an infective agent that determine whether it produces disease and the severity of that disease; pathogenicity and virulence. Pathogenicity refers to the ability of an agent to induce symptoms once it has entered a host. Nonpathogenic agents have no adverse effect on the host, whereas pathogenic agents produce some level of disease. Within a given population, agent pathogenicity is determined by the number of detectable illnesses produced within that population. The greater the number of illnesses, the more pathogenic the agent and the greater the agent's *pathogenic effect*.

Whether pathogenic effects are mild or severe, however, depends on the agent's virulence. Virulence determines the degree of harm or damage an agent does to the host with more severe effects being indicative of more virulent infections (Ewald, 1994).

Infective Conversations. Hofstadter (1985) proposes that in cultural systems, such as organizations, infective agents are "viral sentence". Viral sentences are self-replicating conversations that operate in a manner similar to viruses. Viruses are small "objects" that enslave larger and more self-sufficient hosts (e.g., cells), getting them by hook or crook to carry out a complex sequence of replicating operations that bring new copies into being, which are then free to go off and infect other hosts (Hofstadter, 1985).

For example, consider Sentence A: "It is your duty [job, obligation, calling, mission, etc.] to convince [inform, tell, persuade, etc.] others that 'this' is true [false, real, etc.]". Whenever you are in Sentence A, you execute it and engage in convincing others that "this" is true [real]. And, if others have the same sentence, they will do the same, and so on. In other words, Sentence A gets you to engage in transmission, i.e, it is self-replicating.

Not all conversations, however, are self-replicating. So how do they spread? Hofstadter proposes that they spread by combining with self-replicating sentence in a symbiotic relationship in which each plays a complementary and mutually supportive role in the survival of the sentence system then comprise. In other words, conversations that are not self-replicating must combine with or drag along self-replicating conversations to ensure their own replication. Since conversations can be fragmented, combined, and recombined, it is possible for any sentence to become viral.

For example, let us assume that the entire system of sentences (e.g., a body of theory, research, and beliefs) which comprise "resistance to change" is not self-replicating. This means that this system of sentences, by itself, will not get you to engage in transmission, i.e., reproduce itself. But consider what happens when the word "this" in Sentence A (which is self-replicating) is replaced with the phrase "resistance to change", giving us the sentence "It is you duty to convince others that resistance to change is real".

The result of this combination is a new self-replicating sentence system in which people transmit to others that "resistance to change" is real.

Infectivity, pathogenicity, and virulence imply that not all viral sentences are equally likely to infect susceptible hosts or to produce results even if they do. Indeed, there are many things that are said within organizations that go unnoticed (low infectivity) or unheeded even if they are noticed (low pathogenicity and virulence). Differences in infectivity, pathogenicity, and virulence would also explain why some changes seem to "take off" (high infectivity, pathogenicity and virulence) while others never seem to "get off the ground" (low infectivity, pathogenicity and virulence). Indeed, revolutionary, rapidly moving changes may be the result of inducing infective conversations that are highly pathogenic and virulent, whereas, slower moving, incremental changes are the result of infective conversations with lower pathogenic effects and virulence. This being the case, one way change managers can alter both the speed and degree of change is to find ways to alter the infectivity, pathogenicity, and virulence of their conversations.

One important implication of infective agents in general and infective conversations in particular is that their capacity to propagate within a population has little to do with their epistemological virtue. As Dennett (1991, p. 203) points out, "The first rule of [conversations] is that replication is not necessarily for the good of anything: replicators flourish that are good at … replicating! – for whatever reason". Conversation "X" might spread in spite of its perniciousness and conversation "Y" might go extinct in spite of its virtue. There is no necessary condition between a conversation's replicative power, its "fitness" from its point of view, and its contribution (positive or negative) to its host's fitness (Dennett, 1991). Indeed, conversations do not need to benefit their adherents in order to obtain new adherents, they simply need to be communicated (Lynch, 1996).

Exposure to Infective Agents

Infective agents produce no contagion in the absence of exposure to susceptible hosts. Environmental factors, such as population density, availability of tranmission vehicles, etc are the biological, social, and physical conditions in which hosts reside (Mausner & Kramer, 1985) and determine the opportunities a host has for exposure to infective agents. One environmental factor that influences exposure is prevalence.

Prevalence. Prevalence is the number of existing cases of a specific infection in a population at a given point in time (Mausner & Kramer, 1985). Within a given population, N, there are people who are infected, I, people who are susceptible, S, and people who are immune or have recovered and can not be reinfected, R (Cavalli-Sforza & Feldman, 1981). Prevalence, therefore, is the ratio I/N at a given point in time and changes in this ratio over time establish the prevalence rate. For any host population, there is a prevalence rate that is considered normal, or endemic, for that population.

The higher the prevalence rate, the higher the likelihood a susceptible host will be exposed to an infectious agent. And, the higher the infectivity of the agent, the higher the

likelihood of infection resulting from that exposure. Research on emotional contagion, for example, shows that the likelihood of being infected with the moods of others is a function of the number of people around you in that mood and the severity of the mood (Hatfield, et al., 1994). Prevalence, therefore, tells us the extent to which a particular conversation or set of conversations extists within a population and whether those conversations are spreading.

Prevalence depends on incidence or infection rates and duration of infection. An incidence rate establishes the probability a susceptible person will become infected and is defined as the number of new infections that occur within a given period of time. In general, the higher the incidence rate, the higher the rate at which susceptible people are becoming infected, and the greater the prevalence.

Two factors that influence incidence rates are agent infectivity and contact rates. Infectivity refers to the ability of an agent to invade and multiply in a host. Therefore, increases (decreases) in infectivity will increase (decrease) the incidence rate. But changes in infectivity can be offset or amplified by changes in the contact rate which refers to the average number of people someone comes in contact with in a given period of time. For a given level of infectivity, increases (decreases) in contact rates will produce higher (lower) incidence rates as infected hosts increasingly come into contact with susceptible hosts.

The level of prevalence is also influenced by the duration or recovery period which is how long it takes for someone to recover from the infection how quickly people recover. In general the longer the recovery period, the higher the prevalence. Where the infection is chronic, there is no recovery.

Prevalence offers one way to determine if a conversation has been successfully introduced into an as well as providing some guidance as to what can be done to increase prevalence. In particular, change managers can increase prevalence by increasing a conversation's infectivity, the frequency of contact among infected and susceptible hosts, and the duration of the infection.

Transmission. For an infection to propagate through a population, there must be mechanisms of transmission that bring the infective agent and susceptible hosts into contact with each other. Epidemiologists distinguish between direct and indirect forms for the transmission of infective agents.

Direct transmission refers to the transfer of an infective agent through direct personal contact between an infected host and a susceptible host. As applied here, direct transmission refers to all forms of direct personal communication between people including phone calls, email, letters, faxes, and face-to-face meetings. Interestingly, direct conveyance can occur even when nothing is said. Research on emotional contagion, for example, shows that emotional states (e.g., upset, anger, irritation, etc) propagate from individual to individual even in the absence of any verbal communication (Hatfield, et al., 1994). Shared offices, computer systems, etc. are environmental factors in organizations that support the spread of infectious conversations.

Indirect conveyance refers to the transmission of an infective agent from an infected host to a susceptible host through some form of intermediary vehicle. In the case of conversations, these vehicles include all the artifacts and expressions of human culture including books, pictures, music, papers, sayings, machines, charts, etc. (Dennett, 1991, p. 203). For example, this article is a form of indirect transmission, as are training videos and textbooks. With indirect transmission, the likelihood of infection increases as the number and form of vehicles increase. Indeed, as long as an infective conversation is embodied in any vehicle, and there are susceptible hosts, there is a potential for infection. Only when all the vehicles in which a conversation is embodied are destroyed is the potential for infection eradicated.

Through the use of both direct and indirect conveyance methods, it is possible to increase the contact rates between infected and susceptible hosts, thereby increasing incidence and prevalence. By increasing the number and variety of conveyance vehicles, change managers increase the likelihood of people becoming exposed to and infected by the new conversation. The importance of conveyance vehicles to propagating offers one explanation for why the frequent use of multiple forms and channels of communication is so effective in supporting change efforts.

Host Susceptibility

A host is the target or recipient of an agent. As used here, a host can be an individual, group or organization. Hosts that have already been infected are referred to as "infected hosts" (I), whereas, those that have not been infected but could be are "susceptible hosts" (S). Finally, hosts that have been infected and can no longer be infected or are immune to infection are considered "removed hosts" (R) (Cavalli-Sforza & Feldman, 1981). Thus, for any population N, N = S + I + R.

Susceptibility refers to the responsiveness of a host to a *specific* infective agent. Highly susceptible hosts are very responsive and easily infected by a particular agent, whereas, immune hosts are unresponsive. The fact that susceptibility is always with respect to specific agents suggests that "readiness for change" is a specific and not a general condition. If so, then it would be inappropriate to talk about readiness for change independent of the specific change being considered.also specific.

Immunity refers to a host's capacity to counteract the effects of an infective agent and results from natural endowment, immunization, or prior infections with the same or related agents. Some immunity lasts a life time, whereas, other immunities can be lost through continued exposure to infective agents or due to other infections. AIDS, for example, reduces immunity to all forms of infectious diseases to which a host was previously immune.

One consequence of individual host immunity is a condition referred to as herd immunity. Herd immunity is the resistance of an entire group to the propagation of an infectious agent based on the immunity of a high proportion of individual members within the group. The higher the proportion of immune hosts, the higher the "herd

immunity" and the lower the likelihood of a contagion within the group. Herd immunity is of particular significance where infections are spread through direct conveyance because once the infection encounters an immune host, it does not spread to subsequent contacts. Herd immunity is less effective where infections propagate through broadcasting from a single infected host or where there is an extensive use of indirect conveyance methods. Because of herd immunity, it is not necessary to achieve 100 percent immunity in a population in order to halt the spread of an infection.

Herd immunity decreases the probability a group or community will experience an epidemic after the introduction of an infectious agent even though group members may be susceptible. Herd immunity explains why some groups never seem to get infected with some ideas and why it is that only a few people can "shut down" a change. Herd immunity also accounts for the periodic variations of some infectious diseases, particularly those transmitted from one person to another.

Infecting Change in Organizations

Organizational change is a specific case of cultural transmission (Dennett, 1995; Durham, 1991) in which change managers are engaged in introducing specific conversations into the already existing network of organizational conversations. But change agents are not interested in inducing just any conversation. Indeed, if this were the case, any rumor would constitute a successful change. Rather, change managers are interested in inducing conversations with "instructive effects" (Durham, 1991) that bring about specific changes in action, behaviors, and practices. In this regard, change managers are engaged in purposively infecting organization's with new recurrent conversations so that they remain endemic to the organization.

Managing the Triangle

Successfully infecting an organization with a new conversation requires an understanding of and ability to work with agent, host, and environment factors. According to the epidemiological triangle, the spread of any infectious disease is a function of these three factors. Increasing agent infectivity, opportunities for exposure, and host susceptibility increases the likelihood of infection. For change managers, this means finding ways to make the conversations introduced more infective, increasing opportunities for susceptible hosts to come into contact with infectious agents through direct and indirect conveyance, and increasing host susceptibility (reducing immunity).

Ford and Ford (1995) suggest that change managers can increase conversational infectivity by being more selective in the conversations they use and when they use them. Conversations for understanding, for example, are appropriate and useful when understanding is wanted, but not when action is called for. Where change managers are interested in action, they will find conversations for performance to be far more effective. The difference in these conversations implies that conversations for performance are more infective in the domain of action, whereas, conversations for understanding are more infective in the domain of understanding. Furthermore, with conversations for

performance, unreasonable requests and promises appear to be more pathogenic and virulent than ordinary requests (Goss, 1996).

Prevalence implies that change managers can spread change by "surrounding" susceptible hosts with infected hosts and other indirect conveyance methods that contain the infectious agent (e.g., idea). If this is the case, then change managers would do well to keep infected hosts (e.g., advocates and supporters) mobile so as to increase prevalence within different areas of an organization. Any new conversation introduced into an organization has, by definition, little or no prevalence in that organization. Although this means that the infected host has a large pool of susceptible hosts, it also means that the host risks being reinfected with the more prevalent conversations of the organization. If reinfection occurs, the more prevalent conversations will persist, giving the appearance of inertia or resistance, when if fact what has happened is that the host has been re-infected with the prevalent conversations.

Host susceptibility to a specific conversation is a function of prior experiences with that or related conversations. Where those experiences have been favorable, susceptibility is likely to be higher than where experiences have been unfavorable. In this respect, research has shown that unfavorable experiences results not only in cynicism toward change, but those who initiate it (Reichers & Wanous, 1995).

The impact of prior experiences on susceptibility implies that managers may be able to increase host susceptibility (reduce immunity) by bringing closure to prior experiences (Albert, 1983; Ford & Ford, 1995). It also implies that how managers conduct changes now can and will have implications for how people react to future changes. Accordingly, managers who are interested in creating organizations susceptible to future changes will want to learn how the changes they are currently introducing and managing are raising or lowering host susceptibility. Research on cynicism toward change, for example, proposes that managers should communicate the results of changes, no matter what they are (Reichers & Wanous, 1995). Similarly, research on leadership suggests that host susceptibility to change will vary with the change manager's credibility (Kouzes & Posner, 1993).

Research is clearly needed on how change managers can and do influence such factors as agent infectivity, host immunity, and opportunities for exposure. Although the preceding examples offer some insight, there is a need for more extensive research on each of the factors in the epidemiological triangle and how they interplay with each other.

Stages of Infection

If change is an infective process, then the job of change management is to successfully move an infection through the stages of disease from exposure to disability (incorporation). The ability to do this, however, this requires understanding that the speed with which infections move through the different levels of disease depends on the infection's incubation period.

The incubation period is the time interval between infection and the onset of illness (Mausner & Kramer, 1985). The longer the incubation period, the longer the time between exposure to an infectious agent and any evidence of illness. The incubation period, therefore, is the time period between the exposure stage and the preclinical stage where there is a screening test, or between the exposure stage and clinical stage in the absence of such tests. We have all had experience with incubation periods as the time someone needs to "think about it" before taking action.

What is significant about the incubation period is that each infection has a different incubation period and change managers can misread the absence of symptoms as "nothing happening". There may be no symptoms not because there is no infection, but because the infection has not progressed to the point where symptoms are detectable or manifest. Where incubation periods are particularly long, managers run the risk of giving up on good ideas not because people have rejected the idea, but because it has not worked its way through the incubation period. Differences in the length of incubation periods offer one explanation for why some changes seem to start quickly, whereas, others start more slowly.

Differences in incubation periods would also explain why changes appear to happen suddenly, in a revolutionary, quantum like, or punctuated fashion (Gersick, 1991; Romanelli & Tushman, 1994). For example, assume an infection has an incubation period of six months and that a change manager immediately infects, through direct and indirect conveyance, 50% of the organization. During these six months, nothing would appear to be happening. And then, in the sixth month, there would be an explosive onset of new actions, behaviors, and practices resulting from the new conversation.

The incubation period also has implications for managers who assume that once something is introduced that it will (or should) stick. Such an assumption is based on the premise that all introductions have a short incubation period. Where this is not the case, managers could become frustrated and attribute the absence of symptoms to resistance. Although host immunity does contribute to the incubation period, the incubation period is not resistance. It is simply the time it takes for the infection to progress to a level where symptoms are detectable. If managers are concerned with successfully infecting susceptible hosts, they should use multiple and frequent conveyance methods over an extended period of time so as to allow for any cumulative effects to overcome host immunity.

Given the importance of incubations periods, research is needed to identify the conversational factors that influence incubation periods and movement through the stages of disease. Since incubation is in part a function of host immunity and agent infectivity, altering either of these two factors would be important to altering the incubation periods. Giving managers access to altering this period could bring about a substantial increase in the speed of change without any loss in the outcomes produced by the change.

Research is also needed to help change managers differentiate incubation periods from the absence of infection. Where change managers introduce conversations with low infectivity, there will be no infection and no incubation period. However, if managers confuse the absence of infection with an incubation period, they may take the wrong next

steps. For example, if there is no infection, an appropriate next step is to increase exposure of susceptible hosts to the agent with the intent of producing an infection. However, if an infection exists, an appropriate next step is to hasten the incubation period. Given the inability to differentiate these two states, change managers should probably assume low infectivity and continue to expose susceptible hosts through multiple conveyance vehicles.

Tipping Points and Epidemics

One of the more interesting implications of change as an infectious process stems from the realization of how little is required to produce an epidemic. Epidemics are marked by significant and sudden increases in the incident rate and prevalence of disease or injury above what is endemic (i.e., natural or habitual) for that population. At the endemic level of prevalence, there is an equilibrium in that the number of new infections (incident rate) is equal to the number of recoveries (recovery rate). The "tipping point" is that point beyond which an alteration in factors influencing the incident rate (e.g., contact rate) or the recovery rate (e.g., a new strain of infective agent) results in a sudden "outbreak" or "rash" of cases, i.e., an increase in incidence and prevalence. As long as the relation between incidence and recovery remain at or below the tipping point, nothing changes. However, once the tipping point is exceeded, there is a sudden "outbreak" or "rash" of events beyond what is normal for the population.

Tipping points, and the principles which apply to them, have been used to explain recent reductions in major crimes categories U.S. cities (Economist, 1998). In fact, Rudy Giuliani, mayor of New York, has used the epidemiological principles underlying tipping points as the basis for crime prevention in New York with considerable success. These principles have also been used with teenage pregnancy and shootings.

What is significant about the tipping point is its position relative to the current level of equilibrium. If the tipping point is relatively high, managers will have to expend considerable effort and resources before it is reached. And, during that time, they will have relatively little to show for their efforts. On the other hand, if the tipping point is relatively low, it will take little effort before something happens. For example, it may only take one broken window to spark a rash of window breaking (Wilson & Kelling, 1982).

Rethinking "Change"

The adoption of change as an infectious process within a network of conversations calls for an alteration in our understanding of what constitutes "change" in general and "a change" in particular. Traditional, structural-functionalist perspectives talk about "change" as if it were a clearly definable and identifiable object or thing that is put in place, e.g., a computer system (Ford & Ford, 1994). Even if it is acknowledged that there are many parts, stages, or components, the "change" is nevertheless represented as if it has material properties and clearly defined parameters that exist independent of the conversations in which they are embedded. Within the context considered here, however, such a monolithic view of change is problematic.

But like the organization in which it occurs, "change" is not monolithic discursively. Rather, it is more appropriately seen as a polyphonic phenomenon (Hazen, 1993) within which many conversations are introduced, maintained, and deleted (Czarniawska, 1997). This thematic perspective is evident in Czarniawska's (1997) studies of Swedish government agencies in which particular "changes" were comprised of a series of conversational episodes organized around particular themes (e.g., "decentralization" or "computerization").

Within an infectious conversation perspective, there is no *the* change, like a single conversation, that is being produced. Rather, change is an unfolding of many conversations within a general theme (Czarniawska, 1997), most of which can not be anticipated and must be generated "in the moment". Indeed, every time change managers introduce a conversation to a susceptible host, they will need to engage in a variety of conversations depending on the specific immunity of the susceptible host. In this sense, producing change is like experimental theatre or improvisational jazz where the script (music) is being written while it is being performed (Boje, 1995; Czarniawska, 1997). Although there is a theme to the change, the specific conversations that are needed, with whom, and when have to be generated on a moment to moment basis. To the extent that these conversations are infective, hosts are susceptible, and environments support exposure, change agents are likely to be successful.

It is the very inconspicuousness of propagation one conversation at a time make that can make its occurrence little-noticed. Yet infections need not proceed conspicuously to amass enormous host populations. As Lynch (1996) points out, social movements that double once every decade will increase a thousand-fold in a century. But within this growth, the act of making one new convert seldom looks like the event of the decade in anyone's life. Indeed, the conversation(s) that produced the convert constitutes such a miniscule fraction of one's exertions in a decade, that it commands little or no attention. Yet, the thousand fold increase is the result of those exertions repeated many times over. Such is the power of infectious conversations in the propagation of change.

References

Albert, S. 1983. The sense of closure. In K. Gergen,& M. Gergen (Eds.), *Historical social psychology:* vol 159-172. Hillsdale, NJ: Erlbaum.

Bakhtin, M. 1986. *Speech genres and other late essays*. Austin, TX: University of Texas Press.

Berger, P. & Luckmann, T. 1966. *The social construction of reality*. New York: Anchor Books.

Berquist, W. 1993. *The postmodern organization*. San Francisco, CA: Jossey-Bass.

Boje, D. 1991. The storytelling organization: A study of story performance in an office-supply firm. *Administrative Science Quarterly,* 36: 106-126.

Boje, D. 1995. Stories of the storytelling organization: A postmodern analysis of Disney as "Tamara-land". *Academy of Management Journal,* 38: 997-1035.

Broekstra, G. 1998. An organization is a conversation. In Grant, D., Keenoy, T., & Oswick, C. (Eds.), *Discourse and organization:* 152-176. London, EN: Sage.

Cappella, J. 1985. The management of conversations. In Knapp, M.,& Miller, G. (Eds.), *Handbook of interpersonal communication:* 393-438. Beverly Hills, CA: Sage.

Cavalli-Sforza, L. & Feldman, M. 1981. *Cultural transmission and evolution: A quantitative approach*. Princeton, NJ: Princeton University Press.

Czarniawska, B. 1997. *Narrating the organization: Dramas of institutional identity*. Chicago, IL: The University of Chicago Press.

Dawkins, R. 1989. *The selfish gene*. Oxford, EN: Oxford University Press.

Dawkins, R. 1996. *The blind watchmaker*. New York: W.W. Horton & Company.

Dennett, D. 1991. *Consciousness explained*. Boston, MA: Little, Brown and Company.

Dennett, D. 1995. *Darwin's dangerous idea: Evolution and the meanings of life.* New York: Touchstone.

Durham, W. 1991. *Coevolution: Genes, culture, and human diversity*. Stanford, CA: Stanford University Press.

Economist. 1998. Defeating the bad guys. *Economist,* 349 (8088): 35-38.

Ewald, P. 1994. *Evolution of infectious disease*. Oxford, EN: Oxford University Press.

Fairclough, N. 1992. *Discourse and social change*. Cambridge, UK: Polity Press.

Fairclough, N. 1995. *Critical discourse analysis: The critical study of language*. London, UK.: Longman.

Fisher, W. 1987. *Human communication as narrative: Toward a philosophy of reason, value, and action*. Columbia, SC: University of South Carolina Press.

Ford, J.D. & Ford, L.W. 1994. Logics of identity, contradiction, and attraction in change. *The Academy of Management Review,* 19: 756-785.

Ford, J.D. & Ford, L.W. 1995. The role of conversations in producing intentional change in organizations. *The Academy of Management Review,* 20: 541-570.

Gersick, C. 1991. Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *Academy of Management Review,* 16: 10-36.

Goss, T. 1996. *The last word on power*. New York: Currency Doubleday.

Hardy, C., Lawrence, T., & Phillips, N. 1998. Talk and action: Conversations and narrative in interorganizational collaboration. In Grant, D., Keenoy, T.,& Oswick, C. (Eds.), *Discourse and organization:* vol 65-83. London, EN: Sage.

Hatfield, E., Cacioppo, J., & Rapson, R. 1994. *Emotional contagion*. Paris: Cambridge University Press.

Hazen, M. 1993. Towards polyphonic organization. *Journal of Organizational Change Management,* 6: 15-26.

Hofstadter, D. 1985. *Metamagical themas: Questing for the essence of mind and pattern*. Toronto, CN: Bantam.

Kouzes, J. & Posner, B. 1993. *Credibility: How leaders gain and lose it, why people demand it*. San Francisco, CA: Jossey-Bass.

Lynch, A. 1996. *Thought contagion: How belief spreads through society*. New York,: Basic Books.

Maturana, H. & Varela, F. 1987. *The tree of knowledge: The biological roots of human understanding.* Boston, MA: New Science Library.

Mausner, J. & Kramer, S. 1985. *Epidemiology: An introductory text*. Philadelphia, PA.: W.B. Saunders Company.

Reichers, A. & Wanous, J. 1995. Understanding and managing cynicism about organizational change. *Working Paper #95-35.* Max M. Fisher College of Business, The Ohio State University, Columbus, OH.

Reike, R. & Sillars, M. 1984. *Argumentation and the decision making process (2nd ed)*. Glenview, IL: Scott, Foresman and Co.

Romanelli, E. & Tushman, M. 1994. Organizational transformation as punctuated equilibrium: An empirical test. *Academy of management journal,* 37: 1141-1166.

Rothman, K. 1986. *Modern epidemiology*. Boston, MA: Little, Brown and Company.

Schrage, M. 1989. *No more teams! Mastering the dynamics of creative collaboration*. New York: Currency Paperbacks.

Searle, J. 1969. *Speech acts: An essay in the philosophy of language*. Cambridge, ENG: Cambridge University Press.

Spivey, N. 1997. *The constructivist metaphor*. San Diego, CA.: Academic Press.

Thachankary, T. 1992. Organizations as "texts": Hermeneutics as a model for understanding organizational change. *Research in Organizational Change and Development,* 6: 197-233.

Wanous, J. 1992. *Organization entry: Recruitment, selection, orientation, and socialization of newcomers, Second ed.* Reading, MA: Addison-Weslet.

Watzlawick, P. 1990. Reality adaptation or adapted "reality"? Constructivism and psychotherapy. In Watzlawick, P. (Ed.) *Münchhausen's pigtail: Or psychotherapy & "reality" - essays and lectures:* vol New York: W.W. Norton & Company.

Wilson, J. & Kelling, G. 1982. Broken windows. *The Atlantic,* 249 (3): 29-38.

Winograd, T. & Flores, F. 1987. *Understanding computers and cognition: A new foundation for design*. Reading, MA: Addison-Wesley.