

MODELING BUSINESS AFTER NATURAL SYSTEMS  
USING BIOREMEDIATION AS AN ECOLOGICAL METAPHOR FOR  
ORGANIZATIONAL HEALTH

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### Abstract

This paper presents the results of a qualitative study on how the use of metaphors based on natural systems, ecology, and bioremediation can be an effective and enabling tool for organizational health. A review of the literature presents key theoretical perspectives on biomimicry, bioremediation, business and ecology, evolution in organizations, toxicity in organizations, leadership and organizational development, emotional intelligence, systems thinking, and use of metaphors. The field research consisted of interviews with five individuals with expertise as Organization Development (OD) consultants, leadership coaches, clinical psychology, and mycology. Seven themes were identified from the analysis of the interviews: 1) Toxic work environments, 2) observing the organization as an ecosystem, 3) OD interventions, 4) metaphor and language use, 5) organizational learning. Based on these results a model for organizational bioremediation is proposed which consists of three steps: reframe, resolve and remediate. The model uses ecological metaphors for conflict resolution and systems thinking. The paper concludes with an exploration of individual and organizational implications and with some suggestions for further research.

## Table of Contents

List of Figures .....	4
Introduction.....	5
My Research Questions .....	5
Literature Review .....	7
Biomimicry: Models That Emulate Nature.....	7
Ecological Principles Focused On Bioremediation .....	8
Leadership and Organizational Development.....	13
Systems thinking.....	15
Summary.....	19
Research Methodology .....	20
Participants.....	20
Limitations and Delimitations.....	20
Results/ Data Presentation .....	21
Toxic work environments.....	21
Observing the organization as an ecosystem.....	23
OD Interventions.....	23
Metaphor and language use.....	24
Organizational Learning.....	25
Discussion and Findings .....	27
Model: Bioremediation for Organizational Health.....	30
Implications.....	31
Future Research.....	33
Conclusion .....	33
References.....	34
Appendices.....	36

## List of Figures

Figure 1. Sustainable Organizations Model	12
Figure 2. Ecology of Leadership Remediation Model	18
Figure 3. 3 R's Model: "Bioremediation for Organizational Health"	30

## Introduction

A few years ago my eye caught onto powerful, effective systems that can result from following nature's patterns through a well-known gardening and permaculture instructor working with government systems. This teacher demonstrated the possibility of modeling organizational processes and business systems upon ecological systems. I embarked on learning about ecology and sustainability and discovered natural ways to remove toxins from soil after oil spills using mushrooms, known as bioremediation. I thought: how can we mimic this process for pulling out the toxicity in organizations, communities, and relationships? Then I was introduced to biomimicry, an emerging discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems. I was interested in the applicability of biomimicry to human systems and organization development. In 2007, I spoke to the founder of this work, Janine Benyus, and she said this had not yet been studied in full, yet there was a program called Biologists at the design table, for product design in business. I wanted to create conditions where people can begin to expand their own sense of relatedness to larger circles around them and become more aware of the consequences of actions on the environment and people. We are living systems, not machines. Nature adapts to changes seamlessly - how can we model this ability to adapt to become more flexible in organizational culture? The Ecology of Leadership six month long program in 2009 opened my eyes to a metaphor for personal development based on soil health and root systems for personal trigger work and remediation. That's when it all sparked... using metaphors and processes based on ecology, particularly the bioremediation process, for developing more effective communication systems in organizations.

### *My Research Questions*

How can metaphors based on natural systems, ecology, and bioremediation be effective and encouraging tools for organizational health? This is my central question that includes and addresses emotional well being of people in an organization. This question also includes raising awareness of the state of the planet though understanding the relationships and resources within ecology and natural systems. This large question can be explored through many inquiries: How can we model businesses after natural systems and learn from the billions of years Earth has been developing fluid and synergistic systems catalytic for life? How can we mimic the bioremediation

process to pull out toxicity in organizations, communities, and relationships? Who determines what is toxic and how is it defined? What is the difference between human systems and natural systems, what do we need to keep in mind when using nature-based processes and metaphors? What human systems do we need to pay attention to, especially during change processes and time of conflict? What language will people respond to? I knew there could be a model applied to mimicking natural systems for organizational health beyond case studies. I needed to identify what has been created that is similar to this line of inquiry, to further understand the relation between environmental principles, human systems, and emotional intelligence.

I started with a theory then conducted research. I read literature from known and successful consultants who view organizations as living systems. I reviewed environmental principles to make sure that I was upholding the depth and breadth of ecological studies. I spent time in nature reveling the ancient integrated life cycles and processes. I interviewed Organization Development professionals who are successfully using ecological metaphors in their work. I interviewed mycologists to learn about mushrooms and how their root structure works, how mushrooms can pull toxins out of the soil and not be affected, and how nutrients flow through ecosystems. Finally, I received feedback on my theory and model from two consultants, who have influence in organizations.

## Literature Review

The literature I cite here examine the use of metaphors to understand what creates toxicity in organizations and in our emotional intelligence. I studied ecology and natural systems to learn how to use appropriate metaphors based on bioremediation, with an emphasis on mycology and biomimicry. The focus of the review moves into the role of the consultant, individual emotional well-being, organizational health, and systems thinking.

### *Biomimicry: Models that Emulate Nature*

Biomimicry simply involves mimicking nature and natural processes, patterns, and systems to solve human problems. This mimicry follows the brilliant operating system, our planet Earth, as a complex self-regulating biosphere (Benyus, 1997). The process involves some key *life principles* that are used in designing from nature; these include a) optimizes rather than maximize, b) is locally attuned and responsive, c) fits form to function, d) fosters cooperative relationships, e) is self-organizing, f) life adapts and evolves, g) has a multi-functional design, h) is resourceful and opportunistic, i) learns and imitates, k) contains feedback loops, l) involves cross-pollination, m) is resilient, n) is diverse, decentralized, and distributed (Benyus, 1997). Keeping these principles in mind in exploring natural processes for removing toxins is key in mimicking nature for organizational health.

In investigating the similarities between mimicking and the bioremediation process for organization development, I found that there are a growing number of efforts to apply biomimicry to business and specifically to the design industry. Conferences and magazines are buzzing about this development. An article in *Forbes* magazine stated: “Nature is one of the best R&D labs we know. Companies mimic nature to create products and services”(Upbin, 2009). Examples of contemporary interest in the use of biomimicry for strategies of bio-inspired ways can be found through the portal AskNature.org, which houses the biological blueprints for all biomimicry projects.

*Ecological Principles Focused On Bioremediation*

In order to use ecological metaphors and use biomimicry for organizational design we must first understand deep ecology and natural systems. Ecological principles are the underpinnings of bioremediation and biology based primarily on soil health, which is the foundation for many living things. Three decades ago in the beginning of the deep ecology movement, Watt (1973) explained: “Ecosystems have a high level of organization that encompasses the plant and animal species in an environment” (p.5). He further explained how variables interact with each other in an ecological process, is a systems-oriented way of being, each part of the systems affects other parts, leads to a deep understanding of how complex this phenomena operates. (p. 49)

All living tissues/ systems are broken down by an immense variety of decomposers until once again it becomes usable nutrient rich soil. Sufficient nutrition of the soil is required for growth and the inadequacy of even one nutrient can stop the process. (p.5)

There are many roles for plants to play in ecosystems and I chose to focus my study on mushrooms, as mushrooms are critical for creating soil health and are the main instrument in bioremediation. This study is to understand how health is created and maintained within these natural systems, and to understand what we can learn from natural organizational processes. Mushrooms work through their root structure, the mycelium, which contains specific chemicals designed to decompose plant-based matter. “One of the primary roles of fungi in the ecosystem is decomposition which is performed by the mycelium. The mycelium secretes extracellular enzymes and acids that break down lignin and cellulose, the two main building blocks of plant fiber.” (Oyster Mushrooms, n.d.) Fungi digest food externally outside of its body by pushing the enzymes out from its cells. The fungi breaks plant matter down then sucks the nutrients into its root system to distribute to other parts of the ecosystem in exchange for food sources and sugar (Pack and Rose, 2009).

Mushrooms have a particular function in creating soil health and distributing nutrients through symbiotic exchanges. Identifying the key functions of how mushrooms work and the simplicity in this complex phenomena of how nature organizes itself illuminates the basic roles that need to be filled that affect entire ecological systems. As in an organization, success is dependent on the fulfillment of certain critical roles, recognizing what these are helps bring order

to seemingly chaotic and complex situations. Remembering some of the biomimicry life principles like form fits function, and utilizing feedback loops, helps foster an understanding of the key roles and processes for healthy organization development.

### *Bioremediation*

Bioremediation is any process that uses microorganisms to return the natural environment changed by pollutants to its natural state. Mushrooms are used to clean up oil spills and reduce the level of contamination in a given environment. When the mycelium meets the oil in the contaminated soil it has an immune response, reacting chemically to the oil and interacting with the carbon in oil, which is very similar to how mycelium reacts to its food source: lignin and cellulose. The mycelium responds on a cellular level, digesting and breaking down the oil outside of itself, thus not being affected from the external toxins in the petrochemicals. The fungi then transforms the soil to a place where things can grow, acting as a catalyst providing space (Pack and Rose). Summarizing this type of activity, Stamets (2005) stated: “Synergistic waves of organisms quickly enter a habitat once its toxic barriers are removed with mushrooms leading the change” (p.85). Later we will explore what we can learn from the bioremediation process in identifying catalysts for health in organizations, roles, processes, and how to integrate these ideas through the whole system.

### *Business and ecology*

What has been done with business relating to ecology in modern times? Through recent understanding of the way ecological systems are structured and function, management researchers have developed theories in order to examine and model processes for business. Gunderson and Holling (1995) wrote: “Management itself is a discipline born from the coming together of old knowledge, from diverse sources, into new perspectives....From the wisdom of the patterns of change and stability we observe the intertwining of ecological and social systems” (p. 392). There are similar processes both natural systems and organizational systems go through in the process of change and reaching stability, there is great wisdom to gain from ecological processes. Erika Peng, in her paper on “Shifting our mental models: The environment” (2008), sets up a series of knowledge and actions that the business world and those studying it need to practice in order to

bring ecological principles and wisdom into play. In this context, it is increasingly useful and important for Organization Development practitioners to have a comprehensive understanding of the following: 1) the interconnection and interdependence shared by human and other living systems, organizations, and the ecological systems within which we are nested; 2) tools, practices, methodologies, and successful examples of how to raise this awareness, as well as how to support organizations as they align structures, policies, and practices with ecological health and sustainability; and 3) the leadership that will be required, in ourselves as well as in organizations.

*Organizations as living systems, integration of whole systems*

Taking nature as a model for organization development (OD) a step further is to see the organization as a living, breathing system itself. Meg Wheatley, a well known OD consultant who looks at organizations as living systems, explained

For several years, through our own work in an enormously varied range of organizations, we've learned that life is the best teacher about change. If we understand how life organizes, how the world supports its unending diversity and flexibility, we can then know how to create organizations where creativity, change, and diversity are abundant and supportive. If we shift our thinking about organizing, we can access the same change capacities that we see everywhere around us in all living beings. But learning from life's processes requires a huge shift. (Wheatley & Kellner-Rogers, 1998)

Reflecting on how day to day organizational life operates, how work is structured, and what we are getting out of these processes is part of creating the foundation of this shift. Further, we must recognize what is a constructive process and where challenges may affect the flow, as well as what needs to change. The ability to attend to rigorous self-examination and to include this in business models, plans, and daily expectations of workers is a necessary component of ecological business models. An essential part of this built-in scrutiny involves a commitment to change when it is necessary. Jantsch (1992) stated: “The characteristic of living systems is to continuously renew themselves to regulate this process in such a way that the integrity of the structure is maintained” (as cited in Wheatley & Kellner-Rogers, 1998). Organizations that see themselves as living and open systems are more aware and adaptable to the external environment, thus able to move more fluidly with the changing times. Sibbet (2000) wrote:

Organizations are most appropriately appreciated as living systems, shaping and being shaped by continuous interaction with their environment. Organic, ecology-based models and frameworks are better lenses for understanding as complexity, uncertainty, as dynamism increases. ( p.2)

### *Evolution in organizations*

As organizations evolve and go through distinct phases in organizational life, different leadership and structures are needed for each phase or change period in order to create optimal conditions and advantages for certain arrangements and specific environments (Sibbet, 2000, p.3).

In a Harvard Business Review classic, Greiner (1999) wrote:

We continue to observe major phases of development in the life of growing companies, lasting anywhere from 3-15 years each... and transitions between developmental phases still do not occur naturally or smoothly, regardless of the strength of top management (Sibbet, 2000, p.9).

The key is to know how to adapt and move with the times, allowing the organization to evolve and learn, and not get in its own way. Sibbet (2003), borrowing from the work of Greiner, outlined five stages and five crises of evolution.

The five phases in assessing interventions to include:

1. Creativity phase, disrupted by a leadership crisis
2. Direction phase, disrupted by a crisis of autonomy
3. Delegation phase, disrupted by a crisis of control
4. Coordination phase, disrupted by red tape
5. Collaboration phase, disrupted by too much team-work

The crises identified create crossroads and points where key decisions must be made about direction; Sibbet expands the model into seven phases of organizational life (See Figure 1).

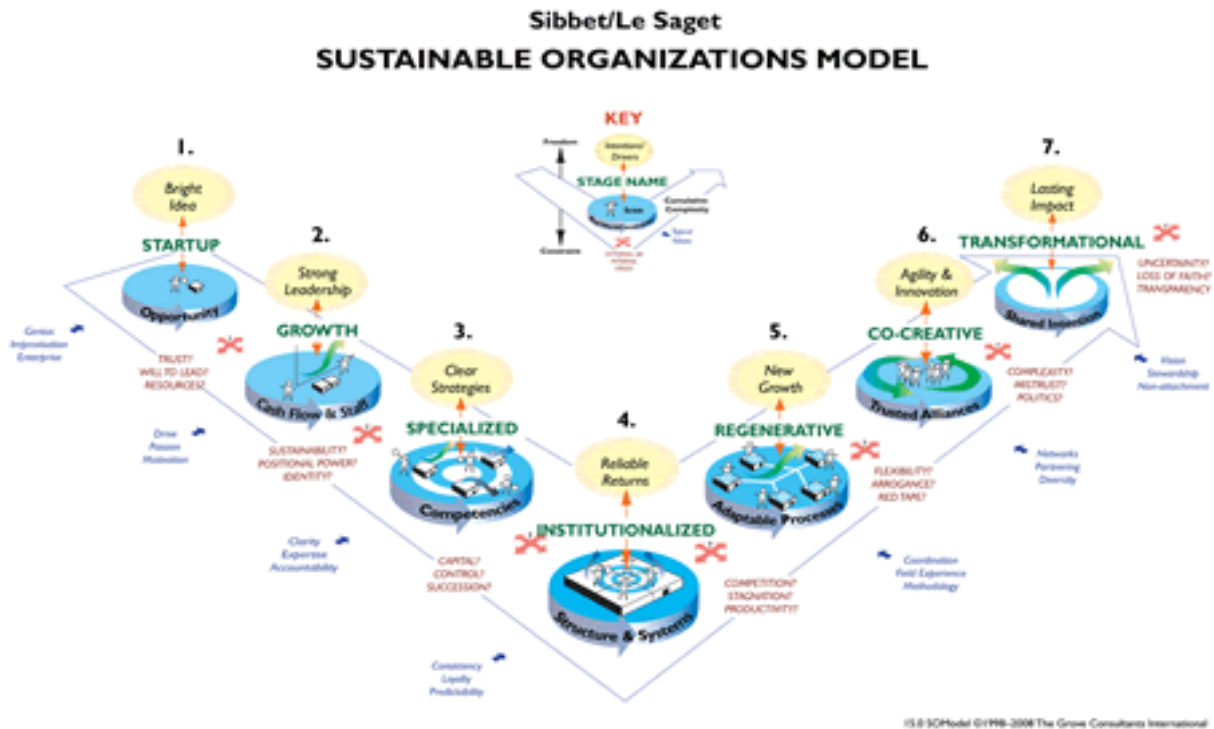


Figure 1: Sustainable Organizations Model

Each stage achieves its stability by having a creative tension between vision of present and future. How the internal environment allows for the flow of communication and changing of systems, will determine how it handles or adapts to the natural cycles of change an organization goes through and how the consultant responds to the organization (Sibbet, 2000). Morgan (1997) wrote: “Successful organizations share configurations or patterns of combined flexibility and control within the structure, that evolve processes for dealing with challenges of external environments allowing constant innovation” (p.55). Understanding these different phases, will be a useful tool in knowing what tools and processes will be most useful at which times in organizational life, respecting the life principle that form fits function.

### *Toxicity in organizations*

In this paper I refer to toxic behavior as the interactions between people in an organization that present conflict and disruption to the workflow. Toxic and destructive behaviors, such as information not being shared, often create communication issues that can inflict harm on an organization and the people in it. The organizational structure and leadership often sets the stage for the health of the working environment. Koffman (2006) pointed out

The way in which you deal with such differences defines you as a ‘controller’ or a ‘learner.’ Controllers give a lot of orders and ask very few questions, and determine how things ought to be. Learners are curious and humble, more inquisitive, consider other perspectives. (p. 3)

If workers within an organization do not take the time to look at the internal systems and to be open to learning, then valuable time and information can be lost. Wheatley (1999) explained: “For need of control, people can be manipulated into participating in hastily planned plans... Instead of taking time to see big picture and patterns” (Wheatley, 1999). If valuable information is not being shared, people are likely to engage in political activity leading to unproductive exchanges that keep relevant information locked inside each person. Without sharing that information, the job will not get done, relationships will deteriorate, and everybody will suffer. In a later text, Wheatley (2006) wrote:

The system suddenly takes off in unexpected directions or responds in surprising ways... In a nonlinear system, the *slightest* variation can lead to catastrophic results... A casual comment at a meeting flies through the organization, growing and mutating into a huge misunderstanding that requires enormous time and energy to resolve. (p.120-122)

Wheatley made a clear case for a single comment being the impetus of huge misunderstandings, a single-source that can have system-wide impact. Other analysts have agreed: “It has been shown that a negative mood state cues a person to think about negative things” (Rosenhan, Salovey, & Hargis, 1981) and systemically create a spiral down effect. Barrett and Cooperrider (1990) emphasized the importance of behavior in the workplace environment:

Three factors need to be taken into account in an organization development effort: The behaviors that are problematic, conditions creating those behaviors, and the interventions or activities that will correct the conditions creating the problems. What is it that people are doing or not doing that is a problem? Why are they doing these things? (p.227)

### *Leadership and Organizational Development*

Important to working with leadership in organization development is learning, understanding that people learn in different ways as they serve different functions to the organization. Individual backgrounds and world views, known as mental models, affect the environment and the learning process. Developing a capacity for emotional intelligence can be the catalyst for growth and greater leadership in organization development, as discussed below. If

there is not support or healthy information exchange from leadership, then that can lead to toxicity or depletion as nutrients are not being exchanged.

### *Learning in organizations*

In order for toxicity to be remedied, the underlining patterns that created the problems need to be evaluated and used as learning opportunities to create healthier systems. The key is to incorporate feedback and develop an organizational culture that supports learning and the integration of this feedback into future resolution(s) of difficult patterns in the organizational environment. The structure of the organization can allow this exchange of information and learning if consciously created in its evolution. Gunderson and Holling explained: “The end result is the creation of meaning within the system and of on-going learning” (p.394). Meaning, then, is another important aspect of cultural change for an organization.

As with the evolution in organizational life suggests, things need to change at certain points, in order to create room to grow. If there is not flexibility for change and innovation the environment becomes much more rigid, people will close-up, and the organization may lose valuable assets through this constrained atmosphere. Change will be more enduring if the organization’s culture and tone support a safe atmosphere for learning and feedback processes (Pesuric & Byham, 1996; Porras & Anderson, 1981, *The Business Case for Emotional Intelligence*). If people feel safe in trying out new processes through a culture of seeking to understand rather than seeking to control, more innovation will occur.

Senge et al. (2004) expressed the idea of cultural change in an organization in the following manner:

At the heart of a learning organizations a shift of mind - from seeing ourselves as separate from the world to connected to the world, from seeing problems caused by someone or something ‘out there’ to seeing how our actions create the problems we experience. (Senge, Sharmer, Jaworski, & Flowers, 2004, p.12).

### *Emotional intelligence*

To understand how to move away from toxic environments into healthy working conditions, I researched emotional intelligence, how we interact with each other and manage our

emotions. Salovey and Mayer (1996) stated: “Emotional Intelligence is the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them, and to use this information to guide one’s thinking and action” (p.6). Further defined as “knowing when and how to express emotions as with controlling them” (Pesuric & Byham, 1996; Porras & Anderson, 1981, *The Business Case for Emotional Intelligence*). Emotional Intelligence (EI) and having a learner’s mindset has been found to be important for success and working with people. The Emotional Intelligence Consortium Group remarked that “learners acquire greater understanding about how their thoughts, feelings, and behavior affect themselves and others” (Pesuric & Byham, 1996; Porras & Anderson, 1981). Part of EI is developing empathy, the ability to recognize accurately what another person is feeling. EI creates a reciprocal flow of influence to allow relationship sanity and task effectiveness:

After supervisors in a manufacturing plant received training in emotional competencies such as how to listen better and help employees resolve problems on their own, lost-time accidents were reduced by 50 percent, formal grievances were reduced from an average of 15 per year to 3 per year, and the plant exceeded productivity goals by \$250,000. (Pesuric & Byham research, 1996)

Emotional Intelligence helps people remain calm and focused in challenging situations, verses being run by emotions which can lead to making mistakes because the focus is often somewhere else. Having emotional intelligence aids in the immediate situation as well as the time that follows an incident, giving perspective rather than mulling over the situation and creating a misconstrued (emotionally based) story that can take the focus off the task and lead to accidents.

### *Systems Thinking*

Systems thinking is the process of understanding how parts in the system influence one another within the whole, the interrelated actions to see the whole pattern of change (Senge, 1990/2006). In organizations, systems are the relationships between people, structures, mental models, team learning, and processes that work together to make an organization healthy or unhealthy (Senge, p.12). In nature, systems thinking is exemplified by how ecosystems and their various elements such as air, water, movement, plant and animals work together to survive or perish. Systems thinking includes responsive action to problems in the system, Gunderson and

Holling proposed that “for organizations, numerous factors must be coordinated to integrate a response” (p. 395). In this concept, it takes looking at the whole system before determining what action to take, responsive action incorporates feedback of what is not working well to improve the system. Feedback of how things are working can highlight the greatest lever for change and allow systems to become responsive, particularly when the whole system, including different mental models, is considered in what actions to take.

Organization Development (OD) practitioners are trained in systems thinking thus are able to see the systems interconnections within an organization and identify the work that needs to be done to create a healthy working environment. Peng (2008) declared: “OD reveals blind spots and buried realities to make more choices available to clients. OD surfaces the impacts and consequences of behaviors and decisions that may not be apparent” (p. 36). Often times it is the system or structure that creates the tension employees feel, the feedback from the experience leads to seeing a situation differently that can result in creating structural change and emotional intelligence. Sibbet (2003) remarked: “The capability of not just hitting goals, but adapting with them through feedback, a team invests in learning from its experience, and generating an awareness of the general patterns behind its work” ( p.8). Systems thinking as an approach can inspire and support new forms of leadership that require more integrity and connection to the whole.

### *Feedback loops*

Feedback is a key dimension of systems thinking. Feedback consists of information, responses, and reflections on an output, performance of tasks, product, etc., used as a basis for improvement. The incorporation of feedback increases the understanding, effectiveness, and opportunities for learning both personally and professionally. Capra (1996) stated: “Feedback loops depict patterns of organization” (p.63), and refers to activities of living systems that build upon patterns in succession. Feedback opens the opportunity to learn and adjust the system. Feedback gives an advantage to recognize the relatedness of all parts, seen and unseen, from the input, processes and output, in an organization and the ecology of the system. Capra again: “It certainly is true that the social system in an organization has dynamics in which circular processes of feedback plays an important role” (p.62). The way we learn is often through feedback, creating

systems that allow reflection and accountability to become more effective. Feedback that supports both the growth of the organization and the individual is paramount to success. An example of feedback can be in the moment, or over time, depending on the need. An example of a feedback loop is included below, from the Emotional Intelligence Consortium.

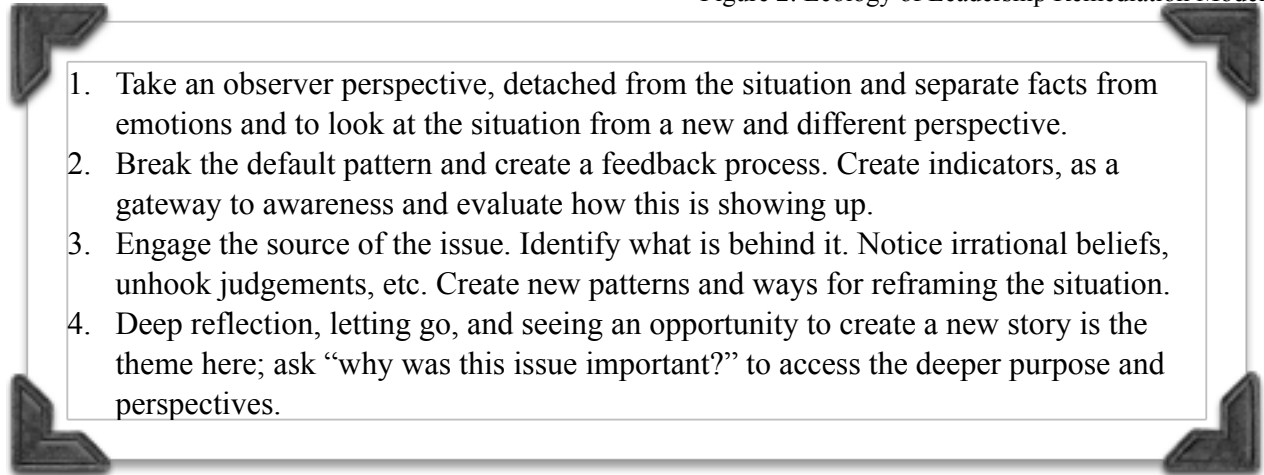
To see if the development effort has lasting effects, evaluate it. When possible, find unobtrusive measures of the competence or skill as shown on the job, before and after training and two months later. One-year follow-ups also are highly desirable. In addition to charting progress on the acquisition of competencies, also assess the impact on important job-related outcomes, such as performance measures, and indicators of adjustment such as absenteeism, grievances, health status, etc. (Pesuric & Byham, 1996; Porras & Anderson, 1981)

### *Reframing*

Using emotional intelligence combined with systems thinking requires multiple lenses to be used in assessing a situation. Gunderson and Holling recognized two main approaches people use in handling situations, depending on their perception and mental model. One increases control on information and action and the other seeks understanding through learning. “The shift is from control to responsiveness and reevaluating the function of systems and a search for alternate processes that contribute to a generation of meaning and learning. All considered key criteria of responsive action” (p. 395). In *The Fifth Discipline*, Senge (1990/2006) described this circle or loop of cause and effect - how we are continually both influenced by and influencing our reality as a “reciprocal flow of influence” (p. 75). How people frame situations and take accountability in a way that allows the conversations to flow more gracefully is through their outlook on the situation, and that allows the story to change. Figure 2 is a process identified by a leadership program to reframe a charged situation and create a new system for engaging.

The Ecology of Leadership program (Stark & Kuntzsch, 2009) lay out a process for reframing.

Figure 2: Ecology of Leadership Remediation Model



Barrett & Cooperrider (1990) shared a case-study on using a generative metaphor to help an organization ‘break out of the current frame all together’ through identifying what would capture the group's attention for action. To build the organizational culture of learning they suggest to “shift the group's frame of reference away from historical reality and into the realm of anticipatory reality, essentially refocusing attention. Stimulate interest to generate sustained enthusiasm and cultivate a sense of adventure” (p.228). Their intention was to create “active inquirers focusing on a domain outside of their own” allowing creative tension in reframing the current mental model to a new outlook on the situation of the current reality to new reality. (p.22). The key in reframing is to create new values and possible ways of seeing organizational life through reflection and forgiveness.

### *Use of metaphors*

Metaphors became a key focus of my study, a way to name what is apparent in the system in a non-confrontational way to open relationships between actions and what we understand. Metaphors create containers to house the conversation and understanding of the systemic interplay helping overcome resistance or rigidity. Barrett and Cooperrider (1990) wrote about it as: “Metaphor transfers meaning from one domain into another and thereby enriches and enhances both domains to create new contextual meaning. Metaphors are, therefore, filters that screen details and emphasize others. They organize our view of the world” (p.222). Metaphors are often used in everyday language, however if used consciously for a change effort, or built up over time generatively, new meaning and understanding about the organizational systems and

lifestyle can take place. “Metaphors present a way of seeing something as if it were something else and provide a steering function for future actions and perceptions. Metaphors facilitate the learning of new knowledge” (p.223).

It is important to note that metaphors must be used appropriately. Given people’s different backgrounds and experiences, words can have different meaning, thus metaphors can be confusing if there is not mutual understanding of what something means. What people put emphasis on changes the understanding of the representations of the metaphors. Lakoff and Johnson (1980) wrote “Metaphors are systemic, and so are the concepts people generally use to talk about something” (p.9) The group value system will determine what is important to individuals and what is virtuous to the group. Thus if a consultant is not aware of the organizational culture, then they could say something that is more damaging than something that would bring about growth. Gunderson and Holling (1995) wrote: “Symbolic language is qualitatively different from the language of science and planning. It is colorful, emotional, heavily dependent on literary devices that build a bridge between the communicator and the audience” (p. 399). Used correctly, metaphors can create opportunities to dialog about important issues that could have massive return and growth opportunities. Barrett and Cooperrider (1990) explored in their case study, through constructing a generative metaphor that deliberately fosters formation of new impressions, the team achieved a renewed capacity for building solidarity and appreciation. “Generative metaphor enables groups to overcome defenses and liberates energy” (p. 220).

### *Summary*

This literature review shows that organizations can model their structure and actions after ecological systems theory and practices. Using feedback loops and focusing on learning in the organization can increase success and bring a healthier environment for individuals and the entire system they work within. Metaphors can create a context to share this information as well as a bridge towards using emotional intelligence in challenging situations. This understanding served as a foundation for my interview questions and inquiry.

## Methodology

This study used a qualitative research methodology to collect primary data to support the development of a model for using bioremediation as a metaphor for organizational health. The data was gathered through interviews with five people: three OD practitioners and leadership development consultants, a psychiatrist/candidate in psychoanalytic training, and a mycologist (see Appendix A). Additionally I had conversations with three other professionals, specific to the review of my model development and on the topic of mycology; a commissioner for San Francisco's Department of the Environment, an OD consultant, and an active mycologist using bioremediation on toxic oil spills internationally. This qualitative study explored the interviewees' experiences with raising awareness through communication, information flow, language use, and practices with ecological metaphors. Through the interview process, core theoretical concepts were identified and analyzed that supported the idea of using a metaphor based on bioremediation for conflict resolution and increased communication flow in organizations.

### *Participants*

Interviewees were selected because of their efforts to raise awareness about the greater environment, their use of metaphors and visual guides in their consulting work, or because they are experts in mycology. All three OD consultants use ecological metaphors with their clients. Three interviews were conducted in person and two were conducted by phone. The location of interviews included the San Francisco Bay Area and Willets, CA. A standard list of generative questions was used for each interview (see Appendix B). All interviews were recorded and transcribed. For the qualitative analysis, raw data in the form of actual quotes from the interviews were organized into common themes. All interviewees signed interview release forms giving me permission to use their names and organizations (see Appendix C).

### *Limitations and Delimitations*

I had a bias that ecological systems and context was not used much in professional organizations, and wanted to see what consultants did with their environmental backgrounds and mental models in organizations. As my bias was that there were not many people integrating ecology and systems thinking organizationally I had a limited pool of participants to interview.

Two well-known consultants in this field Meg Wheatley and Fritjof Capra; were unavailable to be interviewed. Wheatley, Capra, and Peter Senge would have, I believe, offered a great deal of information and direction to my studies. As my model grew out of the data presented, I did not test it as thoroughly as I would have liked.

### Results & Data Presentation

From my interviews the themes I found included the following: 1) Toxic work environments, 2) observing the organization as an ecosystem, 3) OD interventions, 4) metaphor and language use, and 5) organizational learning.

#### *Toxic work environments*

The consultants I interviewed perceived toxic environments in a multitude of ways. All three OD consultants addressed the identification of the patterns among the issues, the systems that were in place to enable this toxicity, and the cause and effect of reactions to these systems. Communication issues and workaholic habits rose to the top of the list of reasons regarding access to information, conflict avoidance, lying, or making inaccurate assumptions. The strongest effect proved to be a harsh political climate. All participants spoke about the result of system dynamics and seeing acts of sabotage or blame heighten, direct attack, and / or convoluted values where it could be hard to get work done. One participant summarized: “Systems get set-up consciously or unconsciously, thinking of family systems. You can’t question the water a fish swims in. A lot of our organizations were put together unconsciously with lots of mechanisms that were set-up to fail” – Madeleine.

When there are deeply engrained communication issues that inhibit information exchange and inhibit people from doing their job, laden with fear is a toxic atmosphere to work in. Sibbets defined the toxic work environment as one where people are “not feeling safe. Where people are stonewalling each other which is what closes people up and close up their energy.” Odin described toxic environments where “Everyday lies and what people do in group context to keep from telling the truth in organizations and from sharing information, just to maintain their position, or to keep doing their job.” Sibbet goes onto mention

If hopefulness & motivation declines and people get discouraged, then people don't have as much interest coming to work then you start see where people don't have aspiration or any kind of sense of the future. From a worst case scenario: people become contentious of other people, attitude, disrespect. That's extremely toxic

Three of the interviewees reflected on how the organizational structure affects communication.

“People get promoted and then get up to the top and get stuck. When the top gets clogged up the whole organization gets clogged up. Then people get stuck in their ways and there isn't a flow of circulation.” –Pack

I learned from these conversations that excess of anything creates a feeling of flooding, which can paralyze thoughts leading to a break-down in communication. As Madeleine the psychiatrist explained “Flooding is based around trauma, when people's mindstate get such that they can't think. My job is to help people think.”

Christopher, the leadership coach shared how it helps to track the pattern to recognize what is going on internally. “What's underneath the experience of the pattern, why does it exist. What's the choice someone is making?”

Another example of excess, is too much change or success. Excess of anything isn't healthy.

You can over do the change process if there is too much energy moving through a system if it doesn't have ways of handling it, exhaust it. Such as if an organization is a start-up working too many hours – scrambling to be in the action. Or too much success, too much action, like the gold rush, can create confusion. The experience didn't feel healthy -Sibbet

Workaholics create toxic atmospheres when people are working 24/7 and there are no boundaries or taking breaks in the day to revive or reflect. People are working tirelessly and heading towards burnout.

Workaholics create turmoil in organizations – similar to addicts - and create a battlefield. High-tech companies run in an addictive way, people leading those organizations primary motivation is to make a ton of money. They drive like crazy – setting up that deal for everyone else. –Odin

*Observing the organization as an ecosystem*

Four of the five people interviewed look at organizations as an ecological systems, observing the patterns and indicator species as information and nutrients flow. Recognizing the functions, roles, and guilds within the organization as an integrated whole system dignifies the diversity and complexity. Odin explained “Assess an organization as an ecology, are the necessary functions being addressed? Is there a process/ indicators to determine how people are interacting?”

Coming from an orientation to work with organizations as though they are living organisms in that people & social and relationships function as whole systems.

Ecosystems thinking is starting to expand... it's one of those inflection points where the new way isn't fully there yet and the old way is dying out. -Sibbet

*OD Interventions*

I asked all the interview participants about how and why they do interventions in order to get a better sense of what to do with a toxic atmosphere. With OD interventions the focus was on the clarity of the organizations mission & organizational culture. Is there alignment with the vision, the purpose of their work, how people are working together towards the collective vision? Is the vision clear?

David Sibbet shared his process, “Work from the inside out with the organization. Start with the purpose, identify values, what are we espousing, then look at goals and how we are achieving them.”

Other suggestions were to gain Clarity alignment around the “why”- why are we doing this.

Alignment around this (mission). Establish patterns of communication. Start with knowing why we are there. Find inspiration and enthusiasm aligning around something. The basis is curiosity. Use guiding questions that help reveal the need & patterns underlining the need. -Christopher

The consultants reflected on the OD role as living in inquiry, asking the right questions, strategic questions can open doors of information to create the foundation for moving towards a goal or vision. Part of the criteria for success is for the client is to have a sense of progress.

Defining where are we going, what it's going to take, strategy. In determining the journey, assess if they need a roadmap or not. A powerful ingredient is willingness, and how to create that or offer a pathway. When there are deeply ingrained patterns that are unhealthy,

people get attached to those. Is the possibility of the healthy opportunity compelling enough to make the required changes? –Christopher

Sibbet spoke passionately about a strong approach in developing rapport and setting the stage is through Appreciative Inquiry and Positive Deviance; point out what's already working well there.

Look at it is as a living system for what is really flourishing how it can be better, such as with a garden. If you can find the parts of the system that are succeeding- the basic organization will accept those answers from those successful departments. -Sibbet

Pack, the mycologist related his experience in working in organizations to ecological systems. Liberating other people through giving and sharing trade secrets, by growing the interest as a whole through the success of the strong entity sharing nutrients. As with symbiosis, a smaller entity being supported and supporting by one large entity. -Pack

Contrarily, the psychiatrist noted that focusing on the positive aspects are not enough to build trust, it's important to see the shadow side, name it, and address interactions.

Clinically people want to believe they have a shot at a good life. People can get very alarmed that you are not seeing their dark side. If I name it very explicitly people are relieved....if people are so overwhelmed with shame they can't do the reframing. Helping keep someone company while they digest the feeling so they can do the bioremediation, neutralize the toxicity. -Madeleine

### *Metaphor and Language Use*

All of the participants interviewed spoke about the impact of language and tone used. Who we are with each other creates the structure to find common ground. I identified language use as a theme to frame the conversation and create context to set the stage for metaphor uses.

Framing has an impact itself, it becomes really powerful what kind of language we are using” explained the leadership coach, and shared a process to build the framework as a practitioner, explain some of the language... ‘I’m going to be using some of this (language) and this is what it means’ -Christopher.

Odin said it in this way:

Develop trust, rapport, established track record to be able to use the metaphors. All of a sudden there's fertile ground to use some of this stuff. Coming in using ecological metaphors when there's no listening for that may not be as successful, frame the conversation to explain.

I asked each of the interviewees what is the purpose and effectiveness of using metaphors and how do metaphors sit with clients. I found metaphors makes things visual for people and grounds concepts for a shared experience they can refer to.

Metaphors provide a compass point, with a metaphor that is successful, and patterns that are successful, it can be used and provide tools and templates in an organization to design effective interactions. -Odin

When people are able to work together and use visual tools it can create a foundation for change.

Getting a group & mapping what is going on, diagram out how it's happening... making a display, large murals & maps is one way a group can change their way of thinking – changing their mental models and working beyond those concepts on how things organize. -Sibbet

Another way metaphors could be used as a tool, is to highlight issues through painting a picture.

There is a way to name things that are going on, recognize what is negative. Using a metaphor creates a space where people feel like they can talk about the elephant in the room. -Madeleine

Sibbet shared how an organization lived and worked as a metaphor, as an ecosystem.

HP (in the 90's) had a whole philosophy called the HP way. HP in the 90's was training themselves to think of themselves like a forest ecosystem. The training, suppliers, etc. Used to believe in employees and communities working together symbiotically, which attracted the best and brightest.

Dangerous if misunderstood, you need to understand the metaphor in order for it to work.

If a metaphor is misunderstood it can create an effect in the opposite direction. Things need to be fully defined- some cultures do not think abstractly. It is important to talk apples to apples and get everyone on the same page.

People who have no experience with living systems (gardening, etc.) won't understand. Give some examples and language on how living systems works, so people can then understand and begin to find balance and ability to use living system metaphors -Sibbet

### *Organizational learning*

The theme around organizational learning arose from the interviewees' sharing the importance of taking time to reflect, understand, and learn to build a foundation for continuous

learning. “People take time to build something useful to build upon and organizes thoughts. It’s about being able to digest what is going on” -Madeleine.

Sibbet shared about the process of framing and examining where the learning can occur. “Look at where is the role for reflection in the organization, where’s the role for talking about success in an organization.” The design of the organization sets the tone for communication, efficiency and the flow of information, including how feedback is given and processed. In creating a learning organization the key is to be able to share idea’s in a way that’s safe and they can be heard. “Having capacity for leadership. Celebrating diversity, innovation where people are engaged and creating something” -Christopher. A learning organization recognizes that all employees have something to contribute, as in a forest ecosystem. “All the functions exists together and can’t live without each other” -Pack.

Leadership rose high on the list as an indicator of where many systemic issues arose from and set the culture of the organization. “Are people in-line and understand the vision? Do they even know where they are going... what kind of leadership is guiding the ship?” -Christopher

Often the mood of the organization is governed by it’s leadership/ executive director. Often the person who comes in has a lot of work to do on themselves, who is in a leadership position being responsible to set the culture of the organization. Are they are clear about what they are doing what they are doing and why, what their motivations are. Are they taking care of themselves. If not then you have a lot of heavy lifting to do -Odin

## Discussion and Findings

The gap or difference I found from the literature did not define toxic in the same way people in the interviews did - it was difficult to find organizational environments defined as “toxic.” I determined “toxic environments” as a phenomena with organizational symptoms of conflicts, communication issues, low morale, sabotage, and low performance. The structures and systems that get set-up in an organizational culture affect how people work together and how information is communicated. My interest is in understanding *how* the “toxicity” can be dealt with in an organizational setting. I gained clarity from the difference made by Koffman and Holling (2006) between a reactionary behavior from a “controller” mind-set vs. seeing the situation as a learning opportunity to understand and improve. The research identified when people open their minds to different ways of perceiving the situations they can reframe the outlook of the issue through emotional intelligence and systems thinking. An understanding from this research is to be open to other solutions to create a healthy environment through our actions and interpretations. It takes one checking in with themselves to see how they are adding to the equation and to determine how they want to move forward.

### *Metaphor use*

Metaphors are simply a tool for visualization and reframing, an aid to create a process for reflection and for creating new outlooks for situations. Metaphors can also depersonalize the issues to help in leading a constructive process towards a working solution. Where we might have leaped immediately to blame someone in the past, new alternatives are seen which would have been obscure through unseen systemic impacts. The more individuals engage in reframing and reflection, the more possibilities for having a climate of learning to look at the larger systems and creating a healthier working atmosphere. Using metaphors on bioremediation, soil health, and living systems is a model for reframing as a learning and reflective process for digesting and understanding the systemic interplay of the issues. The metaphor of how the mycelium digest toxicity by converting the toxins into healthy soil through digesting and decomposing outside of itself offers a framework for designing OD interventions that transform organizational toxins through learning and reflection. The beauty of the mushroom metaphor is that it offers guidelines for what to focus on, for identifying what is toxic and what needs nutrients. Using this metaphor

in organizations is a way to name things that are going on, and to recognize the conversations needed for increased health and vitality. This can be seen as remediating the situation.

A metaphor based on living systems is a helpful tool to understand the ripple effect of the individual learning to the whole, that the whole system is connected by threads and affects. Reframing allows room for emotional intelligence to heighten compassion and thus look at the issue in another way instead of reverting to making decisions or comments run by [based on] emotions. The point is to move from a challenging and toxic situation, to one that can be learned from; to create a healthy and workable outcome through recognizing all the elements that are affected from the issue at hand. This process allows for accountability, personal and professional growth, expanding emotional intelligence, and ability to work through challenges diplomatically. Replicating the positive elements from working through challenges, will lead to better tools and roadmaps for dealing with future challenges, thus strengthening the resiliency of the organization as a whole. The more people participate in understanding, reflection, and replication of what is working well, the more the organization becomes a learning organization.

#### *Understanding how to work with organizational evolution*

Recognizing that phases of evolution exists in an organization, change is needed at certain points, each state has a different way to maintain coherence. This gives an opportunity to step back and examine things, focus on what working style and leadership is needed most at what time. Knowing how/when to step in and show up is the true test of OD skills and emotional intelligence. If people are overwhelmed with change they cannot do the reframing. The OD consultant role is to simply help the individuals digest what is going on, so they can do the bioremediation, and develop next steps. Use of this metaphor in organizational situations helps identify processes in the system related to the current environment. In using soil awareness with organizations, the OD consultant can ask questions such as “What are the conditions to grow?” Using guiding questions help reveal the actions and patterns underlying the real needs. Understanding people’s mental models and how they influence experiences and actions would be extremely beneficial for reframing, or breaking up the toxic aggregates in the soil. The OD consultant would set the context by explaining emotional intelligence to provide a framework to

develop and enhance the ability to interact with others. Coaching the client, if needed, to search for alternate processes generating learning and meaning is a key factor for responsive action. If the change process is to be sustained, it is essential to create feedback loops and indicators as gateways to awareness to evaluate how this is generating learning and meaning.

The consultant can be seen as the fungi in soil systems using organization development practices to unveil the concentric circles of the organizational health one at a time. They can shift the focus from control to responsiveness, creating the conditions for reevaluation of the process through reframing exercises and reviewing how the organization is developing overtime. This approach could contribute to the assimilation of ecological process terms into business nomenclature furthering the integration of natural systems into organization development.

It is important that organizations cultivate where and how people in organizations learn from each other. Much of the learning happens through dialog between people. It is clear that lack of interpersonal skills, active listening, and constructive communication and information downloads in the organizational systems can undermine a healthy exchange. As my mentor, Janet Beazlie, says “the way to heal a toxic organization is to connect people to each other and help them become conscious of their systems and intrinsic connection of why they want to be there.” The OD perspective brings in an opportunity for informal learning and spreading of information that can change the environment in the organization. Being aware in the present moment; listening deeply beyond preconceptions; letting go of old identities and the need to control; and making choices for how to move forward. Together, these aspects lead to consciousness of a larger field for change and one’s participation in it.

Below is a model that outlines a process for the OD consultant to use in organizational settings using the bioremediation metaphor.

Figure 3: 3R's Model: "Bioremediation for Organizational Health"

The mushroom metaphor and remediation process can be used explicitly or implicitly. If used explicitly, this boils down into the **3 R's**:

Step	Process	Metaphor
<b>Reframe</b>	Identify the issue and players involved. Engage in a conflict resolution exercise: Clients learn how to reframe their outlook on the issues and seek understanding of other outlooks through active listening, seeking common ground, giving/receiving feedback.	Soil awareness: assess the clumps in the soil the need to be remediated, where toxicity has formed.
<b>Resolve</b>	Resolve the issue through reviewing all aspects of the problem, where the issue arose from. Using systems thinking clients learn to see the issues as how they operate/contribute in and are influenced by the system. Digest the issue outside out themselves, seeing how the systems affect the situation, take time for reflections, and accountability.	Digestion & Decomposition: The mycelium is pushing enzymes outside of itself to digest the toxicities in the soil, and decompose material.
<b>Remediate</b>	Through these feedback sessions, relationships and systems grow, strengthen, and become more effective overtime. There would be a complementary process in the client becoming a learning organization, knowing when to 'remediate'. Creating more effective, trusting relationships resolving to a more efficient organization, constantly learning to improve.	Through breaking down toxins, and moving minerals around, able to bring in nutrients to keep growing. Bioremediation brings more nutrients into the soil, Natural systems!

In using the metaphor on bioremediation, the first step is to build awareness around biology, soil, and the mushroom digestion process, explain in bite-size pieces, what would happen in layers over time. It would be helpful to have visuals for each stage, to ground the process and create common ground for those involved in the process, enabling systems thinking. This model

needs to be validated and enriched through application. If implicit, the awareness is more for the consultant to understand living and natural systems for a integrated whole systems perspective. Explicitly, is to understand learning organizations with an emphasis in the reframing process for conflict resolution. The result in either process is for creating a learning organization through people learning constructive communication methods and reframing perspectives of daily interactions and situations.

## Implications

### *Individual level*

The use of the bioremediation for organizational health model requires the development of the capacity for feedback, reframing, and learning how to work with emotional intelligence. For an individual, the focus is on their outlook of the situation and how flexible they are regarding what the outcome should be and how their story of the situation can change. The opportunity in reframing is to be accountable in a way that allows the conversations to flow more gracefully, allowing humility and humble learning. Building emotional intelligence can help one become more effective and compassionate.

### *Organizational level*

To use this model, it is important to first take a comprehensive look at the context of the situation in the organization. Observing what the environment is like, the culture, and where the organization is at in its evolution and then to review the communication structure and processes for accomplishing tasks related to the situation, to get a better perspective of the overall system. The next step is to identify where the aggregated pools of toxic behavior are happening or where the problem is. Inquire as to why the problem exists and provide any initial thoughts on how to remediate it. This could start off as a coaching process that could be amplified by using visuals to map the process that would be helpful for systems thinking and digestion. Asking the client to come up with a metaphor for where there is conflict or challenges to lay the framework for using ecological metaphors, such as where there may be toxicity in the soil. Then explain to the client how the mushroom bioremediation process happens with mycelium, the root system of the mushroom's external digestion process. Another way of looking at this process is for increased information to be shared as the situations get remediated, such as how the nutrient flow increases

after bioremediation. The client may have insights or need further time to reflect on their organizational systems, thus check in often for understanding. The conflict resolution techniques are to support reframing through having the conversation and remediating the situation. Mimicking the bioremediation process in how mycelium spreads throughout the ecosystem is to be thought of as constructive approaches to spread throughout the organization, as with Positive Deviance. The client may have insights to this; ask them how they could see this happening in their organization. Allow other metaphors to come up and connect back to living systems such as looking at the ecology of the organization. Further example: just as in a forest ecosystem the mycelium moves nutrients through to young plants that are on the forest floor that don't receive sunlight. Making a direct correlation to where the organization learns from its strongest points, the healthiest parts of the soil in the ecosystem. The end result is for the culture to shift from toxicity to healthy through multiple interventions that involve expressing emotions, learning from the situations, the systems, and acting on a solution.

### *Societal levels*

This model empowers use of active listening to create a more collaborative environment where people enjoy learning from diversity. The model can help people see across borders, and learn how to talk to each other and listen to each other. Language itself frames the conversation, and creates context of who we are with each other.

### *Language Challenges*

Every organization has its own language and culture, and thus may or may not resonate with certain terms used. This theory will be challenged if the framework for using ecological metaphors is not clear. The insight is to identify when use of metaphors is useful and when it can be damaging. Our mental models will affect how we see the natural environment and its relationship to organizations, business, communities, and ultimately, ourselves. Metaphors can be used to name an elephant in the room indirectly and create opportunities to dialog about important issues that could have massive return and growth opportunities. Calling their environment toxic may be a challenge in itself. We must then be able to communicate these issues to our clients in an effective manner that includes satisfying many additional requirements such as professionalism, integrity, and credibility.

### Future Research

Without discussion and application of theory, methods, and tools people cannot develop the skills and capabilities required for deeper learning and reflection. More research on how people assimilate and can use these metaphors is needed. Research and experiences both supporting this theory and challenges organizations have encountered using this theory would further this research. Does this model truly resolve conflict and lead to systems thinking? Does it help people understand the bioremediation process? Other research possibilities include: further exploration of case-studies; more interviews with consultants experience in guiding organizations in using the organizational bioremediation to ground the theory; interviews with employees in learning organizations to explore how this model would correlate with their organizational culture; and find ways Organization Development can be used as part of the Biomimicry field.

### Conclusion

Imagine organizations as more responsive to changes in their environment and yet more stable and coherent in their sense of identity, purpose, and vision. Imagine high productivity and creativity with social responsibility through focusing on internal health. Through the reframing process and creating a learning culture, I hope this proposed procedure of using metaphors based on natural systems will be an inspiration for organizations to think about the environment and state of the planet. Good strategic thinking brings such dilemmas to the surface and uses them to catalyze imagination and innovation. Given people's different backgrounds and experiences, words can have different meaning, thus metaphors can be confusing if there is not shared understanding of what something means and how the metaphor applies. The OD consultant has a special role of creating and defining the space for the people in organization to understand how to work through conflict and see things systemically. Knowing the background and culture of the current state of the organization in its evolution will guide the intervention. The use of mental models allows awareness of forces compelling us to act as we do and the ways in which we construct our views of the world. The effective use of ecological metaphors can have a positive ripple effect in the creation of healthier and more effective work environments through building the trust necessary for people to speak freely to each other about issues that matter for them and their organizations.

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## Appendix A: Research participants

### OD Consultants, facilitators, and leadership development consultants:

David Sibbet, 25 years experience, The Grove Consultants

Odin Zackman, 10 years experience, DIG IN

Christopher Kuntzsch, 7 years experience, Ecology of Leadership Program

### Psychiatrist/candidate in psychoanalytic training:

Madeleine Lanky, 15 years experience

### Mycologist

Damien Pack, 10 years+ experience

Mia Rose, 7 years experience internationally

### Theory & Model participants, feedback pool:

Darian Rodriguez Heyman, Business Consultant, San Francisco Environmental  
Commission

Raquel Gutiérrez, PhD OD consultant

## Appendix B: Interview questions

How would you define organizational health? What are the criteria for a healthy organization?

What do you define as a toxic environment in organizations? What is "toxic"?

What do you do with clients when faced with a toxic environment?

Do you use an assessment tool or process?

What has been your experience in 'reframing' with clients? What else do you call this?

Communications processes?

What is a learning organization?

How do you create a learning organization? Best practices?

What creates sustainability with this method?

Metaphors:

What's the purpose of using a metaphor?

Do you find yourself using metaphors in your work with people?

What are the results and reactions from using metaphors?

How often do you use metaphors?

Why do you use metaphors? Have they been helpful, and if so how?

What metaphors do you use and when?

Why?

What metaphors on the environment do you use, why, and when?

What results have you seen from this?

## Appendix C: Interview release form

Dear Research Participant,

Your participation in this project is greatly appreciated. The purpose of this study is to explore how OD consultants handle and process anomaly and outlying data, including confidential and off-the-record comments received during a client consultation project. I am very interested in this important topic and hope you will find our conversation useful, thought provoking and enjoyable.

With your permission, I will audiotape and transcribe our interview. I may also take notes. I assure you that I will maintain the anonymity and confidentiality of you and your client organizations. No names or other identifiable information will be revealed in this study.

Your participation is completely voluntary. You may ask any questions regarding the research and they will be answered fully. You may withdraw from the study at any time.

If you agree to participate, please complete the following:

I, (print your name legibly) \_\_\_\_\_,  
 have heard and read the purpose of this study. Any questions I had have been answered to my satisfaction. I understand my right to withdraw my consent to participate at any time.  
 I hereby freely give my consent to participate in these aspects of the research project:

Yes   No: Recorded interview

NAME (Signature): \_\_\_\_\_ DATE: \_\_\_\_\_

Please feel free to contact me if you have any further ideas or concerns about the project.  
 If you would like me to send you a copy of my final paper, please indicate your request in the box below and provide an address or email for me to do so.

Yes   No: I wish to receive a copy of the final paper

Please send to the following address:

\_\_\_\_\_

Thank you again for your participation,

Katrina Zavalney

Sonoma State University, Organization Development MA Candidate