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Sustainability by collaboration: The SEER case

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"How do you build consensus for action in a region as large and complex as Southern California?" — Question posed by a sustainability proponent employed by the Port of Los Angeles.

There is widespread consensus that conventional human activity, which supports every aspect of our lives, is incompatible with the needs and operations of natural systems. To the extent permitted by local laws, conventional industrial operations typically take resources and consume their value to the enterprise without consideration for renewability, leaving the waste. As populations have climbed and the reach of industrial operations has increased around the globe, natural systems have been severely impacted; waste from modern life has created harmful visible and invisible pollution. We do not live within our means; our situation has become unsustainable. This course cannot reasonably be sustained as defined by the United Nations Brundtland commission in 1989:

"Sustainability means meeting the needs of the present without compromising the needs of future generations."

We can do very little to change the biology that have developed over millennia. We must, therefore, change human activity. As the call for such changes increases, businesses face significant pressure to address their part in contributing to ecological imbalances, such as global climate change, exponentially growing quantities of toxic and non-biodegradable waste, and loss of habitat and species — to name but some of the consequences of our unsustainable life styles.

But calls for sustainability are not limited to the need to address alterations in the biological environment. For those undermined by escalating debt, the call is for "sustainable budgets;" for those concerned with healthcare and the surge of chronic disease, the call is for "sustainable healthcare;" and for those concerned with global warming, and energy dependence, the call is for "sustainable energy." Responding to these issues, many companies focus on making technological shifts, e.g., finding a future in "energy and environment" technology design. While such efforts make a difference, they lack the efficacy and scope of what can only be achieved by more broad-based actions. Typically, however, these efforts are company specific and do not involve collaboration with competitors or with companies in unrelated industries. Yet many of the sustainability issues business faces might be addressed more innovatively and effectively — with greater "bang for the buck," if you will — through greater collaboration.

The question addressed here is how to achieve that collaboration and coordination among multiple organizations to overcome the fragmentation that has to date, for the most part, prevented larger scale strategic action.

This paper focuses on *collaborative mechanisms and organizational learning* among project partners spread across different organizations, together seeking to strategically manage the systems challenges that sustainability requires. As a real life example of this process, the paper presents the case of a Southern California based multi-organizational effort called the Sustainable Enterprise Executive Roundtable or SEER. Lessons learned through the discussion and SEER example may provide tools and strategies to help change agents successfully master sustainability challenges. The article offers business leaders and change agents an actionable framework for (re)considering their sustainability efforts and five suggestions for moving their sustainability efforts beyond fragmentation and toward long lasting institutionalization.

The case of SEER illustrates how one network — in this case companies along the value chain of consumer goods made in China for the U.S. market — engaged in collaborative inquiry and action toward sustainability at a regional level. As the work of SEER shows, new ideas and practices can evolve from organizational learning and support development of a system

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of regional organization that effectively tackles sustainability issues. Additionally, the SEER case may inform the design of a template to aid in overcoming barriers to regional and even national alignment: these are practices for the common good.

BUSINESS MOTIVES FOR SUSTAINABILITY

Sustainability lies at the intersection of financial, social and environmental health — described sometimes as the "triple bottom line." The term captures three equally important management principles that guide effective change agents concerned with business sustainability: to generate profits without sacrificing human or environmental capital. Therefore, to the question "What elements are important in managing the sustainability challenge?" the answer is "all elements." The variety and complexity of information to be dealt with when one must consider and incorporate *all* elements, can, of course, seem completely overwhelming.

Nevertheless, the issue of sustainability invites us to think about nothing less than all of what is involved in how we live and work. Therefore the answer to the question "Who needs to respond to the sustainability challenge?" is, "Well everyone!" To meet the challenges of sustainability would appear to demand a societal process requiring interactivity among federal, state, local, organizational and individual level policy and practices.

SUSTAINABLE ENTERPRISE EXECUTIVE ROUNDTABLE (SEER): WHO AND WHY

On December 8, 2006, researchers from the USC (University of Southern California) Center for Sustainable Cities, led by the author, convened a group of business leaders from regional companies interested in sustainable enterprise. Participants were invited to join an "experiment in collaborative learning" in support of a more sustainable region. The learning would be anchored in practical collaboration — doing together what no one company can do alone to move the region, and beyond, toward sustainability.

SEER originated among research faculty at USC whose initial collaboration at the Center for Sustainable Cities resulted, first, in a proposal to the U.S. Environmental Protection Agency (EPA) to fund work aimed at developing a model that described how value was generated or destroyed around use, reuse and re-cycling of aluminum based products originating in the Pacific Rim. As part of this proposal, the EPA required letters from business partners expressing their willingness to allow access to data. Initial conversations with the business partners sparked an interest among researchers in going beyond primarily or solely decribing the aluminum products networks to actively engaging these potential champions in efforts to align their overlapping systems around sustainable outcomes.

The nexus of the business network was readily identified as the Port of Los Angeles (referred to as "POLA") because it is a hub of importing alumninum and exporting re-cyclables. Thus the reseachers' design focused increasingly on drawing together businesses whose interests and acitivies overlapped, even as their jurisdictional authorities did not. The Port itself was very willing to support the work, not least for its own self-interest, among other motives. As a landlord it has limited direct control over the activities of its users (e.g., the ocean carriers who rent space at dock). Nonetheless, the port had drawn the ire of environmental activists who could not fail to notice that the huge volumnes of import/export, while providing many economic benefits, also inflicted negative health/respiratory impacts on its neighbors, especially children.

POLA as the hub of activities for many players made it a natural focus for issues of sustainability. These parties together formed a classic system of interdependent parts that lacked a coordinating mechanism. The system was "under-organized." To achieve sustainable outcomes individually and collectively required the development of a structure and processes for collaboration.

Convening

Between August and December 2006, the researchers' work focused on convening an initial meeting for some of the system's players. During this time the reseachers also organized a day-long executive education class on sustainability, which turned out to be a useful springboard for parties interested in working beyond the classroom setting. When the executives' inevitable question of "what do I do differently on Monday?" was posed, attending a SEER meeting became one actionable response. Additionally, potential SEER attendees were identified through referrals inside of the business network to other potentially interestested parties.

Invitations to join SEER usually began with an explanation of its informing vision — i.e., to do together what no one alone can do — and moved on to asking for recommendations of those the business partner would wish to see at such a meeting. Those contacted quickly grasped the pragmatic logic of bringing together all of the relevant stakeholders; few declined outright. The idea of convening with peers across organziations was attractive, as so few peer interactions are possible beyond market place transactions. In those transactions, the language of buying/selling to each other precluded any reimagining of their system toward different but shared goals. While clearly there were also economic motives in the willingness of some to convene (after all it might be possible to find new customers!), there was a desire to enter into learning together about the intractable and often political questions of how to drive their own organizational system, and the larger system in which they were embedded, toward more sustainable outcomes. Exactly what that would mean, would be the first question that the researchers and all attendees would need to answer at the first December meeting.

While all who self-selected into the SEER project were welcomed, champions with demonstrated capacity for executing on a complex change portfolio — or who were seen by peers as potentially having this ability — were especially sought after. Additionally, to ensure some alacrity in response to interesting project concepts that would likely emerge in the work together, it was important that those invited have authority to sign off on projects in the ballpark of $20K without having to wait for higher ups' approval. And to

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ensure that involvement with SEER could be reinforced and strengthened outside of meetings, when someone agreed to become engaged, they were invited to bring one network guest. In this way the researchers kept busy making invitations to SEER.

Background of the Port of Los Angeles (POLA)

Before turning to describing SEER's work, it may be useful to understand the context provided by POLA. Founded in 1907, POLA shares many attributes of the "average" older, mid-sized organization. The City of Los Angeles Harbor Department operates POLA under the legal mandates of the Port of Los Angeles Tidelands Trust and the California Coastal Act, which identify the Port and its facilities as a primary economic and coastal resource of the state and an essential gateway of national and international trade. LAHD is chartered to develop and operate the Port to benefit maritime uses. POLA functions as a landlord by leasing Port properties to more than 300 tenants. It may be considered a hybrid organization, in that it is partly a for-profit enterprise, but is overseen by an agency with both career civil servants and political appointees of the mayor.

A 2007 study found that at its peak, POLA operations in 2006 supported jobs nationwide (2.2 million), statewide (1,075,176), and in the Los Angeles area (62,093). Local businesses received $7.6 billion of direct sales revenue from providing services to the marine cargo activity at the marine terminals, cruise lines, marinas, fish-processing tenants, and non-maritime commercial real estate activity. The cargo activity at the Port created an additional $152.7 billion of total economic output in the state, the majority of which is created by the movement of containerized cargo and the state industries supporting the distribution and retail operations associated with the containerized cargo moving via the Port. As a result, $5.1 billion of state and local tax revenue was generated due to port activity.

Green Growth Challenge

The Los Angeles-Long Beach port complex is America's busiest port by container volume and the fifth busiest in the world. More than 40 percent of containerized goods in U.S. — foreign commerce are handled at POLA. Cargo volumes in 2007 reached 8.4 million TEUs (20-foot equivalent units), compared with 2.9 million in 1997. Political pressure prompted leadership both outside (e.g., mayor's office) and inside POLA (e.g., department heads) to draft plans to reduce emissions and adopt alternative technologies. Legal disputes also resulted in POLA making significant investments in green growth policies and mitigation programs.

The economic downturn of 2008—2009 resulted in 11 percent of the world's stock of approximately 4000 cargo ships becoming inactive, with cargo volume down by 20 percent at POLA. Volume growth is expected at only 5—6 percent for 2010. However, as west coast ports remain the preferred gateway for high-value, time-sensitive shipments to the U.S. interior and Southern California region, POLA used the downturn to build infrastructure for future growth and expand incentive programs to keep customers while still honoring environmental commitments. Cost, complexity, uncertainty and lack of federal standards for port environmental policy have resulted in some shippers diverting cargo elsewhere, as they shop for cheaper and more permissive regulatory environments.

Initial Meeting Convened

Thus with POLA acting supportively, the lead USC researcher for the SEER project convened around 30 business representatives for a December meeting. Participants arrived already believing that the Sustainable Enterprise Executive Roundtable was innovative and pragmatic. The meeting process for the work generally portended a shared purpose in overcoming structural obstacles (such as shared jurisdictions which no one was officially in charge of) and emphasized a learning opportunity.

As might be expected, not everyone was initially on board. A participant from an icon consumer products organization illustrated the challenge of taking time out to learn. The company is known as an unusually hard charging organization that demands extraordinary time commitment from its highly select employees; its head of logistics erupted after the first hour of the first meeting, shouting across the room: "So tell me how all this talk this is going to fix my problems?"

There is no right answer to this question — one common to any faculty member who has stood in front of a class of executive management or M.B.A. students. However, the very anxiety being expressed is usually an obstacle to more creative thinking. The lead facilitator responded: "If what you were doing before joining this group was working for you, you would not be here, right?" After a nodding head, she continued: "What if we take time to get ready before we aim and fire, otherwise we may shoot ourselves in the foot?" Coincidentally the irate business leader was a hunter, the analogy worked, and he promised to give it one meeting at least!

The lead faculty member also suggested keeping a running record of "actionable ideas" on a whiteboard and regularly checking "to see which we want to dig into." And thus was born a practice for keeping talking and acting in alignment. It turned out, as is often the case, that once the doubter agreed to give the process a chance, he could see solutions more readily than some others. By the end of the meeting, he had proposed a project that would directly benefit his own company while also engaging all other companies — they could undertake a project that alone he could not get done, despite his excellent employees.

The early and ongoing outreach efforts for SEER make the structural impediments to collaboration clear. They include the following obstacles:

1. Status quo business practices erode our capacity for living sustainably. While most organizations want to conduct business on their own terms and to control their own destiny, such beliefs constrain the system's ability to generate sustainable outcomes.
2. Nobody wants it this way! The individuated, competitive system in which we find ourselves often fails to reward sustainable practices and thus makes them difficult to justify and implement. There is little motivation or reward for collaboration.

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Table 1 SEER Systems Redesign Questions.

1. Carbon reduction How does the project result in systematic decrease of dependence on fossil fuels?
2. Toxicity reduction How does the project result in systematic decrease in production and use of bio-accumulating materials? E.g., how does it reduce reliance on man-made toxins & plastics?
3. Increase in global and native ecosystem health How does the project result in systematic increase of bio-productive spaces? E.g., how does it reinvigorate unproductive land, set aside more habitat, increase forest and coral reef?
4. Ethical engagement of stakeholders How does the project result in increase of social inclusion and access to resources? For example, how does it support environmental justice (EJ)?
5. Partnership in organizational networks How does the project increase collaboration within value networks so that organizations can do together what no one can do alone?
6. Leadership How does the project go about systematically increasing our ability to ''walk the talk'' — demonstrating & cultivating our own and others' leadership so that our actions are consistent with the demands of a sustainable world?

3. Businesses are *starting* to shift the system and reduce negative social and environmental impacts while finding profitable markets.
4. Part of the sustainability challenge comes from systems issues (e.g., pollution) over which no one actor has jurisdiction. Structures for multilateral decision-making are needed to overcome inter-organization boundaries that increase the difficulty of responding to sustainability challenges.

As a way to follow up and take a next step together, attendees were invited for a set of workshop-dialogues aimed at cross-entity and cross-functional collaborative learning. It was agreed that each participant company/organization would send three people to the workshops with the ideal makeup of the team comprised of a decision maker, a technical staffer, and a guest, e.g., from supply chain or civil society.

Questions in Search of ''Sustainability'' in SEER

At the next meeting, participants were introduced to a widely accepted framework developed by the Natural Step, an international think tank whose work on operationalizing sustainability had proven useful to many international companies. In this framework, an *integrated* approach balances concern for a healthy system, access to sustainable feedstocks of all kinds, and a profitable marketplace with the concept of not passing along environmental cleanup costs to future generations. Therefore going beyond the general definition of sustainability offered by the Brundtland commission, the researchers introduced the Natural Step's ''system conditions'' for achieving sustainability. A more operational definition was also introduced: *a sustainable system is one in which neither materials from the earth's crust (e.g., oil) nor man-made toxins systematically increase, and in which the health of green spaces and basic human needs are secured.*

From this more operational definition, six concrete categories were derived, within which the participants could articulate ''design questions'' whose function was to get at what it might mean for the shared cargo transshipment system to move toward sustainability. Table 1 shows the design questions for sustainability.

In framing the conversation as a way to imagine redesigning organizations, using a rigorous understanding of sustainability, those convened recall entering a ''huge'' conversation, one they rarely had in the workplace filled with day-to-day fire fighting. Some referred to ''brain sprain,'' still others to disappointment with having a conversation that did not generate concrete solutions that could be applied tomorrow.

At the closure of the meeting, the researchers invited those willing and able to *continue* to work together to put some of the ideas into action to return after the holidays. Thereafter, a ''co-investment' of time and money was required so that new knowledge and new practices could be generated together''. Knowledge would benefit all, the researchers for their scholarly aims but especially the practitioners for the new practices that might emerge. Thus, SEER was born as a scholarly-practitioner endeavor in which new learning could be generated in the field of collaborative practice.

INVESTMENT BY SEER MEMBERS: FROM WHO AND WHY TO HOW

After the holidays, a smaller but more invested group of business leaders returned. Each was willing to spend seed money to help the group get underway. Participants usually took a half-day to meet together every couple of months. Learning inside SEER is defined as the transformation of experience through reflection and conceptualization, so that new projects can be undertaken collaboratively. For this reason, these early meetings focused on systems-thinking

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Table 2 SEER Organizational Members.

- CDM — The world's largest environmental consulting company with a core competency in water management was interested in the process of facilitated collaboration in support of sustainability efforts.
- Disney — One of the world's best-known brands associated with Southern California, recently engaged by super retailer Wal-Mart Stores to curb its carbon footprint, was interested in the possibility of collaboration in support of its green efforts.
- Mattel — Known as the home of the Barbie doll, the international logistics division was interested in reducing its carbon footprint associated with shipping toys manufactured in China.
- Phelps Group — One of LA's larger marketing/advertising agencies, recently embracing a "green" focus (building a client base that included Whole Foods), Phelps' CEO was interested in a leadership-level conversation about sustainability issues.
- Port of LA — Part of the one of the busiest harbors in North America and hub of cargo movement from Asia, environmental affairs and later the entire port was tasked with making the notion of "smart growth" both real and green for the port.
- Volvo — The world's largest truck manufacturer with a tradition of concern for safety and environmental health was interested in the potential for developing hybrid trucks for use at the Port.
- Waste Management — The largest waste hauler in the US was transitioning its business model in an era of "zero to landfill" to one of "materials handling." WM therefore wished to be part of a learning effort that was both business-focused and applicable to the sustainability challenge they faced. They especially embraced a partnership orientation in working *with* (not just for) their key customers and suppliers to rethink waste in a more sustainable way.
- Yusen Terminals Inc. — One of a dozen port terminal operators, a wholly owned subsidiary of the green Japanese global shipping and logistics company NYK Line, sought to be a presence among regional "green" leaders and continue to remain ahead of the curve on environmental issues.

exercises that allowed participants to better see and understand how the world looked to the other participants. Table 2 lists those organizational members who formally co-founded the collaborative effort.

Subsequent meetings were held at different organizational members' sites — thus allowing a real feel for how the peers saw the world. For example, a visit to POLA included a cruise of the terminal whose very magnitude undercut any expectation that simple solutions would easily be arrived at. The very scale of the problem reinforced a need for balancing patience and innovative reach.

Focusing on Carbon Management in the Goods Movement System

Multiple directions for collaboration were possible and "carbon management" — the vocabulary itself had become more mainstream in U.S. media at this time — was chosen for the initial endeavor. While carbon management tackles but one dimension of an overall sustainable system, it was the "low hanging fruit," as a number of the participants were experiencing pressure from stakeholders to reduce their carbon footprints. In light of CO_2 proliferating in the atmosphere and causing global warming, it was argued that seeing the amount of carbon associated with each container of goods would be impetus to deal more effectively with the systemic challenge of "carbon management." Soon there was considerable interest in working toward a user-friendly carbon calculator for reducing the carbon dioxide footprint from goods movement. Reducing the CO_2 generated by shipping goods from China through POLA offered a potential point for positive change that connected participants.

After some explanation of Life Cycle Assessment modeling by a faculty expert as well as discussion of quantification and identification of data needs (point/non-point source pollution), the research team received the go-ahead to gather data with and from participants. Each participant contributed a set of rigorous data that richly described his or her company's partial slice of the big picture.

In a subsequent workshop, two models for measuring CO_2 were presented by faculty using the data collected by and with the participants. The static model captured the distance travelled by trucks, trains and ships with variation by choice of port (POLA, Panama, Suez). The other was a dynamic model of carbon emissions associated with the transshipment of cargo, which allowed time and cost to be modeled simultaneously. Users could see in "real time" what the tradeoffs were when choosing different freight routes. In turn, further work was envisaged for developing a shared investment strategy for regional infrastructure.

In effect, through this process SEER offered the opportunity for participants to learn firsthand how much coordination was required and how conditions for shared learning could be created. At a minimum, it required the group to become aware of processes for decision-making, data exchange and coordination, and the importance of the six design questions in guiding action. It also pointed out the importance of data sources. Since the group was only a microcosm of the whole system, the models were only as accurate at the data provided. Involving more organizations and getting more data would only improve the results.

SEER Project Results

SEER offered POLA a network of organization leaders with whom to collaborate on sustainability issues affecting them, the environment and society. The focus on carbon reduction spurred conversations on solutions, such as consolidating trucking routes in China and looking into the possibility of sometimes using routes through the Suez rather than the Panama Canal to reach the eastern seaboard. Thus, leaders of the business sector in LA that imports goods from China became aware together of how cargo route choices might optimize the combined aims of reduced shipping time, affordable cost and carbon reduction. The model developed for these considerations was then further developed for generic use.

From a shared "mental model" based on the six systems redesign questions (Table 1), participants moved into

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productive conversation about what a sustainable end state might look like. It was agreed that future SEER projects would take steps toward reducing reliance on fossil fuel and toxins and move toward increasing green spaces and healthier communities. The results of these projects — it is unlikely that any one project could address all six dimensions — would be measured with regard to the "triple bottom line," meaning accounting for the full cost and benefit, as measured in environmental, social and financial capital.

Working off the "same page" allowed participants to identify leverage points for sustainable change in the places in which they had accountability. The question of how mutual benefit can accrue from working collaboratively around some of the challenges identified moved the conversation from merely understanding toward *action that might make a difference*.

WHAT'S NEXT? LESSONS IN LEARNING

> "*The message I'd send for future efforts...companies need to make a commitment and find time for employees to work on efforts like SEER. The benefit is having a focus that allows the company get new, better and different ideas.*" — SEER participant.

Generally speaking, SEER was created with an orientation to research that promotes scholar—practitioner interaction, called "action research." As suggested by Fig. 1, the SEER project emerged with an awareness of the importance of "relational space," or consideration of how people's willingness to drive projects for change has to be nurtured through association with like-minded people. This was deemed necessary for the type of trust required for good ideas ("conceptual space") to result in innovative collaborations ("action space").

SEER was therefore framed as an experiment in having business participants engage in collaborative activity beyond the tradeoff type of thinking that typically predominates in the face of environmental problems. We learned that, indeed, business leaders are quite interested in learning together how to tackle the sustainability challenges in which they are each one of many stakeholders. In that sense, the *relational space* was the easiest to develop, even though, ironically, it is precisely the type of "soft people" issue that many inter-organizational ventures too often pay little attention to developing. The *conceptual* space was also easily established; the issue of sustainability was a common frame of reference, and its implications were substantive enough to warrant investment. By going through a systematic group learning process, the members quickly arrived at ideas about collaborative projects that would accomplish positive outcomes not possible through the actions of any one member. Moreover, the mix of practitioner and scholarly input was well received because it emphasized pragmatism. Thus the "action space" could emerge.

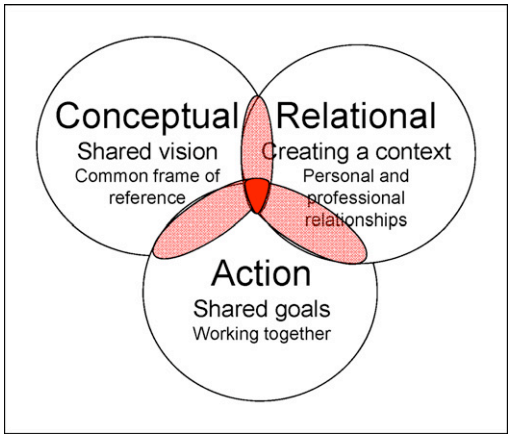

Fig. 1 Collaborative Agency: Connecting Concepts, Relationships and Action.

Along with the one focused collective project (e.g., the carbon calculator), much "haphazard" learning was reported along the way, including numerous bilateral projects developed to address the interests of two companies. For example, Waste Management and Port of LA saw that natural gas captured from Waste Management's landfills could be used to fuel port vehicles and support the move away from oil dependence. Additionally, guests invited from participant company's supply chains also brought new and different conversations to meetings, e.g., a representative from PepsiCo Inc. brought an idea for true re-cycling of plastic bottles (different from the typical down-cycling that occurs when bottles are made into something less economically valuable). Sparking a larger conversation about waste reduction also spearheaded a new project inside Mattel Inc. to rethink packaging design with end-of-life in mind. Like so many learning experiences, projects were emergent, and their eventual value is hard to know immediately. Having patience appears to have been pragmatically useful for those involved.

Haphazard learning is a benefit that occurs between and among existing members of the collaborative. Changes in membership of the group would present both opportunities and risks. New members could afford new opportunities for haphazard learning, for example. However, new members might disrupt an emerging efficiency in decision-making and communication processes as new perspectives, motivations, and goals are brought into the conversation. Due to the time constraints for some as well as personal events affecting others, there were some changes in SEER's membership. Nonetheless, as seasoned practitioners, many of the participants withstood the obstacles and remained committed.

As SEER moved into a new phase of development, others joined because they too wished to be part of a leadership-level learning and action-oriented conversation that was reimagining the system in which they worked. They saw the effort as "out of ordinary time," away from everyday demands, yet also with the potential for crystallizing new projects. As one SEER member said, "Where else do we sit with peers from other companies and have real conversations?" Additionally, participants found particular value in having such conversations when practice-focused scholars were present to provide guidance.

RECOMMENDATIONS FOR PRACTICE

The SEER case demonstrates several important practices for advancing sustainability through collaborative network design and learning. These practices are necessarily

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interdependent and should be applied with sensitivity to the particular situation.

First, SEER illustrates the role universities can play in convening loosely connected but interdependent networks. *Universities are well situated to convene regional organizational learning ecologies*. A university, with its relative political neutrality, can convene many types of stakeholders that might not naturally come together. A university-based learning consortium may be an ideal meeting place to facilitate collaboration among business leaders and policy makers to make experimental investment decisions for the whole system. The system may be defined in various ways, such as a geographical region or a significant supply chain, and bounding a system is as much an art as a science. What is important in creating the conceptual space is having an ecology of stakeholders agree to the boundary and become active in convening and engaging with relevant others.

SEER indicates that aspirations among stakeholders can be broadened and elevated if effort is undertaken after initial convening to cohere the group around a shared vision of sustainability, informed by science and a learning approach to activity. Such multi-stakeholder consortiums need a clear purpose or shared goal or common ground to move forward. The initial vision — doing things together that single organizations cannot do on their own — was apparently an attractive notion. Combined with the six system redesign criteria, the consortium had a clear direction to move.

Second, the SEER case provides insights into designing the composition and structure of inter-organizational collaboration. For example, *it is very helpful to have, at a minimum, an executive decision maker and a technical expert from each organization*. This allows for a balance between detail and strategy, which helps ensure that any redesign of current processes will have sufficient technical foundation *and* executive cover to get underway as a learning experiment.

In addition, of those organizational representatives invited from each company there can be an ideal mix of personal commitment and organizational authority — sometimes even in the same person. For example, the POLA executive who formally brought POLA into the SEER network had a Ph.D. in marine biology and an intimate knowledge of the problems caused by invasive species. In his spare time he coached soccer for local kids, for whom the respiratory impact of port pollution was very real. When someone with this type of lived experience speaks about sustainability practices, those around him listen with respect. Such commitment is infectious and, when coupled with organizational authority, instigates an attractive dynamic that helps further to compel others' commitment to the shared goal.

Decisions about whom to invite are therefore an important design step for a learning consortium. Participation can be an attractive opportunity, as it is rare that systems stakeholders communicate directly outside transactional exchanges. As a consequence, stakeholders rarely know much about others' experience of their shared system. Understanding this motivation helps to establish the relational space.

Third, SEER illustrates the importance of *co-investment for implementation and learning*. It may be best to establish from the outset that collaborative action and learning will succeed only as *a co-investment* by those involved. The participants in the consortium need to have "skin in the game." Given the multiple agendas of the participants in a learning consortium, learning that is not immediately applicable must also be funded. Therefore funding may be sought from multiple sources, including R&D budgets from participating companies, federal grants sponsored by business but written by university-based researchers, and public agencies.

SEER also illustrates that the core of the co-investment is dialogue. We cannot assume that people of like interests can communicate well, or can see broadly enough to collaborate effectively. Systems thinking and other skill-building exercises that allow participants to explain their own system and to see the systems represented by their colleagues are useful in this regard. For example, once the consortium was operating, references to the carbon calculator fostered conversations that highlighted leverage points for self-interested action in practical terms.

Additionally with regard to organizational design issues around investment, SEER illustrates that all the best thinking and goodwill in the world cannot maneuver around budgetary practices that militate against sustainability in important ways. If a positive ROI (return on investment) is demanded within 3 years, "systems oriented" sustainability projects that require much longer time horizons will not qualify for investment. For example, solar panels rarely produce returns in less than 5 years. Unless these and similar structural hurdles are reconsidered at the executive level, there is little chance that large-scale sustainable investment projects, such as new infrastructure, will be funded.

Fourth, SEER illustrates the crucial *link between individual and collective efforts* to bring the under-organized system into a more formal structure for action. It is important to take time to generate coherent movement toward collaborative action. Therefore, early efforts to cultivate dialogue should be clearly linked with collaborative action. There is every reason to pursue "early, small wins" as long as the commitment to a longer time horizon is firmly maintained. The more tightly bound to the business responsibilities of those present (as opposed to a good idea for "someone else" to do), the more likely a project is to move forward. Acknowledging the need to have participants experience their time as directly applicable to their everyday business goals, specific short-term, pilot or demonstration projects can facilitate collaboration. To this end, systems thinking and dialogue are ways to change mindsets, as these approaches generate collaborative social action. Intensive work with building capacity, however, may also be necessary at the individual level, outside the consortium.

University scholars active in the presentation and shaping of relevant learning can help address the reluctance of many practitioners to engage in learning beyond their personal experience. For example, one of the most powerful learning experiences was a physical tour of the port. SEER members were able to see the irrational consequences of perfectly rational but independent actions and decisions. Such vicarious learning experiences may be especially persuasive for an audience that is less keen to embrace conceptual knowledge.

Fifth, SEER illustrates *the benefit of treating assessment as an opportunity for redesign and learning*. Assessment methods should be simple and easily understood by decision makers. In particular, the goals and the performance standards used in the decision-making process must be quantified, at least in part, if they are to be used to make funding

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decisions for the future. In SEER the practice of creating a learning history — a methodology for evaluation and engagement in organizational change efforts — was initiated by the researchers. The learning history process asks individual participants to share their story of the group's activities. The multiple stories are then offered as a coherent narrative — sometimes with multiple perspectives on a single event of significance — and brought back to the group for reflection. The resulting narrative is designed to encourage conversation about what should have or could have happened, which also informs future efforts. Participants who were not present from the start can find these conversations, grounded in a shared document (sometimes a magazine like article or a video) offer very valuable peer insights into the process they are joining. Adding quantitative results, when they are ready, offers the opportunity for the learning history to engage new decision makers and key stakeholders in the ongoing collaborative learning effort. This type of collaborative reflection on learning has multiple audiences and uses; moreover, it provides a structure by which to make needed changes in the ongoing network's mission and purpose, composition and structure, goals and metrics for success, decision-making practices, and operational processes.

CONCLUSION

The 1969 National Environmental Policy Act noted that, ''It is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations — to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.'' As this more than 40-year-old policy statement affirms, the perception of a need for ecological balance and sustainability is not especially new. As our subsequent national history indicates, it is also not easy to implement.

SEER offers a concrete example of a new way of tackling systemically complex endeavors, such as sustainability, that cannot be managed by one stakeholder, no matter how powerful. The case identifies structural forces that can hinder as well as motivate participation in a collaborative endeavor. These forces must be addressed to create a system capable of action. The case also describes the group and organization processes that must be designed, including membership, goal-setting, and decision-making practices. Finally, the case maintains a focus on the individual executive's ability to make a difference inside and beyond his or her own sphere of influence. Together, executives from a variety of organizations can exert their collective interests in sustainability through real projects and action. These efforts address the fragmented structures that have plagued individual organizational attempts to accomplish sustainable ends.

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Complex supply chains span the globe. But these developments do not alter biological or social realities that have taken shape over thousands and millions of years. Consequently, businesses operating within this growing web are facing a host of ''sustainability'' problems: social and ecological imbalances created by this globalization, such as a widening social divide between haves and have-nots, global climate change, exponentially growing chemical and material waste and loss of habitat and species. Therefore the background concern in this paper is that of sustainability, i.e., living (socially, economically) within our means. Recognition of the need for such collaboration is growing. It is, however, exceedingly difficult to engage a diverse group of partners in successful collaborative systemic change. Although some relevant research exists, cross-sector collaboration at this scale is largely unexplored.

Scholarship on sustainability continues to increase. There are many frameworks beyond the one chosen to ground this work, i.e., the Natural Step, see http://www.naturalstep.org. For more information look for a comprehensive list and short analysis of twenty-one different frameworks in J. Elkington, ''Triple Bottom Line Reporting,'' (2003), available http://www.ccc.govt.nz/TripleBottomLine.

Additional foundational reading on sustainability might include: P. Hawken, A. Lovins, and L. Hunter Lovins, *Natural Capitalism: Creating the Next Industrial Revolution,* (Boston: Little, Brown and Company, 1999; 2000); J. M. Benyus. *Biomimicry: Innovation Inspired by Nature* (New York, NY: HarperCollins, 1997); see also http://www.biomimicry.net; H.A. Verfaillie and R. Bidwell, *Measuring Eco-Efficiency, a Guide to Reporting Company Performance* (Geneva: WBCSD, HarperCollins, 2000); A. Sturm, M. Wackernagel, and K. Müller, *The Winners and Losers in Global Competition: Why Eco-efficiency Reinforces Competitiveness: A Study of 44 Nations* (Chur/Zürich: Rüegger Publication, 2000); see also: www.ecologicalfootprint.com; W. McDonough and M. Braungart, *Cradle to Cradle: Remaking the Way We Make Things.* (New York, NY: North Point Press, 2002). More information about the Global Reporting Initiative can be found at www.globalreporting.org. Information about the U.N. Global Compact can be found at www.unglobalcompact.org. Information about Social Accountability International can be found at http://www.sa-intl.org/.

The study has been guided by the participative principles of action research (See Reason and Bradbury's, 2001; 2008, Sage *Handbook of Action Research* for an encyclopedic overview) which aims to build a community within which knowledge can be built that binds together a community and informs interested others. Thus, the author actively participated in meetings and projects, and in addition periodically presented interpretations from the research, engaging participants, facilitators and organizers in regular dialogues on implications. More generally then, action research is an orientation to knowledge creation that arises in a context of practice and requires researchers to work *with* practitioners. Unlike conventional social science, its purpose is not primarily or solely to understand social arrangements, but also to effect desired change as a path to generating knowledge and empowering stakeholders. We may therefore say that action research represents a transformative orientation to knowledge creation in that action researchers seek to take knowledge production beyond the gate keeping of professional knowledge makers (Bradbury-Huang, (2010) ''What is good action research?'' in *Action Research Journal*.).

The practices of other large-scale organizational collaborations have much to teach also. Of particular relevance are ''sustainability collaborations'' such as The World Business Council for Sustainable Development (WBCSD), the Social Venture Network, and the UN Global Compact, which are composed of large, for-profit companies exploring how to transform their businesses and their societies into more sustainable systems. Although some business participants' primary motive may be to ''greenwash'' their enterprises with symbolic gestures, for the most part the participants in sustainability consortia sincerely, seek unique opportunities to undertake systemic change that is both economically sensible and enables the business to mitigate or improve the environmental and social outcomes of its actions. The work described in the paper, and summarized in Figure 1, is a direct development from the systems thinking work of Senge's (1990) *The Fifth Discipline*. It includes a deeper understanding of the cross-organizational dynamics that are at work when many executives from numerous types of organization seek to work effectively together. Senge, Lichtenstein, Kaeufer, Bradbury, Carroll (2006) *Sloan Management Review*, suggest that ''meeting the sustainability challenge will require the kind of cross-sector collaboration for which there is still no real precedent. It must be co-created by various stakeholders by interweaving work in three realms: the conceptual, the relational and the action-oriented.''

The Learning History is a practice developed by researchers (of which the author was a part) at the Center for Organizational Learning at MIT in the 1990s. Hilary Bradbury-Huang and George Roth have since developed the

method, separately and together. Their coauthored article is in the *Sage Handbook of Action Research*, 2008. Learning histories have also become quite popular in Europe where they've been used especially to help escalate efforts by local government authorities as communities and towns move to embrace carbon reduction technologies.

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