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Integrating Frameworks for Sustainability

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Integrating Frameworks for Sustainability **SoL Sustainability Consortium**

Few areas for deep and pervasive organizational learning and change are more timely than how business corporations learn to act in ways that become more harmonious with the natural environment. The first challenge enterprises committed to the environment must face is understanding what sustainability means and what a business strategy for sustainability looks like. In response to this need, many "environmental sustainability frameworks" have been developed in recent years.¹ This array of sustainability frameworks can be bewildering for firms seeking to develop shared images of where they want to go and basic strategic concepts to guide decisions. There is a real danger that, rather than serving as guides for change, the multiplicity of sustainability frameworks will foster needless competition and ultimately paralysis.

In response to this need, a working group of the SoL Sustainability Consortium was formed to better show how the different sustainability frameworks relate to one another. It is not our aim to evaluate different frameworks -- indeed all that we have considered have merits and their own respective managerial advocates. Rather, we seek simply to help managers make sense of the array of sustainability frameworks so that they can make more informed choices in choosing tools to support learning and change in their organizations.

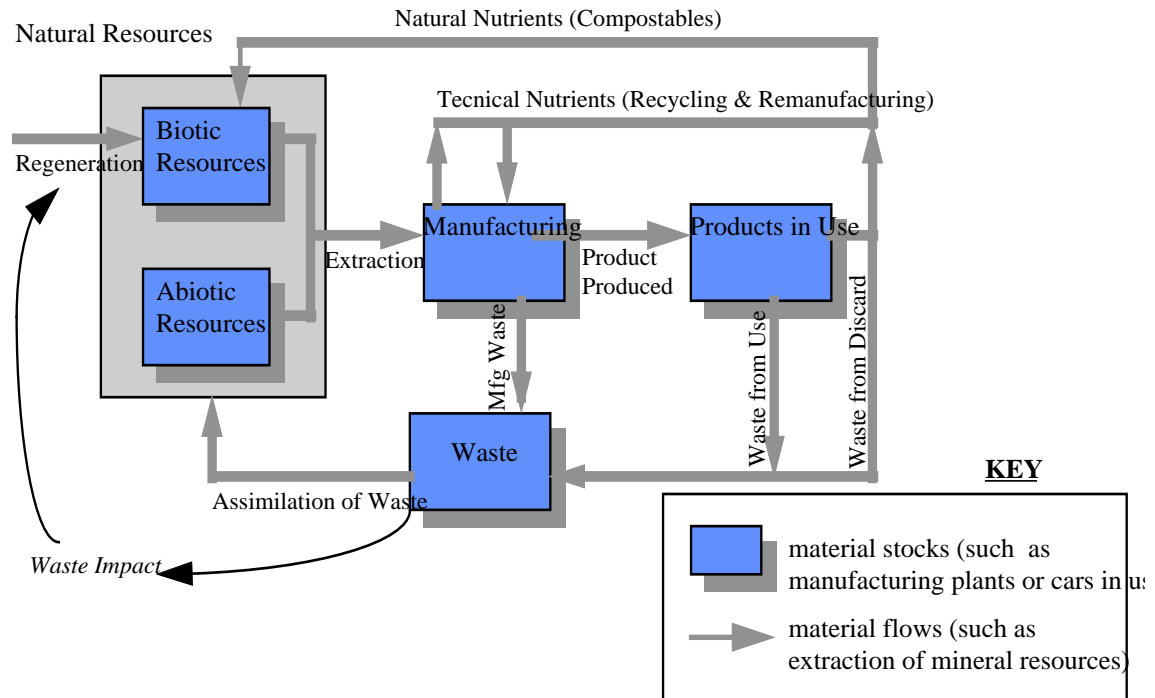
Defining sustainability: three worldviews

One reason that sustainability poses such an intrinsically difficult challenge is that it requires developing business strategies that embrace three distinct worldviews: rationalism, naturalism, and humanism (Ehrenfeld).² Rationalism speaks to the need for efficient utilization of resources. Humanism speaks to the need for meaning and purposefulness. Naturalism speaks to the need to recognize that human activities unfold within larger natural systems. Rationalism has long been the dominant espoused view in business, evident today in the universal emphasis on labor productivity and financial return. But, we believe that in a world of increasing environmental and social constraints, exclusive focus on rational optimization of the enterprise will ultimately limit long term viability and wealth generation. At its heart, the strategic challenge of sustainability lies in embracing the many tensions that exist between these three worldviews and finding synergies among them.

Examples of rationalistic concepts of sustainability include:

- WCED (Brundtland) definition of sustainable development:
a form of development or progress that "meet the needs of the present without compromising the ability of future generations to meet their own needs"
- WBCSD concept of eco-efficiency
= (Product or Service Value)/Environmental Influence
- Resource Productivity (Porter & van der Linde)
= (Product or Service Produced)/Natural Resource input
(for example, factor of 4 to factor 20 reductions in resource use (e.g., von Weizacker)

One way to develop a naturalistic concept of sustainability is to consider basic stocks and flows of materials and waste by-products in the industrial system embedded within the larger natural system:



All manufacture of goods depends on material resource inputs, either resources extracted from biotic (living) or abiotic sources, or “technical nutrients” (McDonough) from recycling or re-manufacturing. Manufacturing processes produce by-products in addition to intended product output, which can be either waste (such as industrial effluents) or recycled into further production. Products produced become products in use. While in use they can also generate waste by-products (such as auto emissions). Eventually, when their useful lifetime is over, they can become a third source of waste through disposal, be recycled as technical nutrients, or be “composted” as natural nutrients (such as products that are biodegradable). Lastly, all sources of waste accumulate until they biologically degrade and are assimilated back into natural resources. Until then, their presence can affect the regeneration of biotic resources (such as the pollution of fisheries or acid rain affecting forests).

In the terms of this diagram, sustainability means (1) that the stocks of natural resources, both biotic and abiotic, must not be depleted beyond their regeneration rate, and (2) that all sources of waste generation, from production, use and discard, must be driven toward zero.

The naturalistic perspective illuminates limitations in rationalistic concepts like resource productivity or eco-efficiency. For example, if the ratio of product produced to natural resource input improves, resource extraction is reduced initially. But waste generation may continue to rise, especially waste from use and from discard. Moreover, total extraction may even increase over time, if production rises more rapidly than resource productivity. In short, resource productivity can improve and overall environmental degradation worsen.

Humanistic concepts of sustainability rest on notions of stewardship and responsibility, the basic desire of human beings to act in ways that support and preserve life, for themselves, other species, and future generations. Moreover, sustainable ways of living must nourish other intrinsic motivations, like justice, personal growth and fun.

There are a wealth of humanistic articulations of environmental stewardship, especially among native peoples. One widely known humanistic articulation of justice is the UN Universal Declaration of Human Rights. Another comes from the famous letter attributed to Chief Seattle (Campbell):

"One thing we know. The earth does not belong to man, man belongs to the earth.... Man does not weave the web of life. He is but one strand in it. Whatever he does to the web, he does to himself."

Operationalizing sustainability: integrating sustainability frameworks

All sustainability frameworks rest on one or more of the three worldviews and their respective definitions of sustainability. Not surprisingly, rationalism is the most evident worldview, but most sustainability frameworks represent syntheses of rationalism and naturalism. Humanism, by contrast, is evident explicitly in only some frameworks.

In order to see how sustainability frameworks relate to one another and to the core challenge of operationalizing sustainability, we have found it useful to distinguish strategic guidelines, organizational practices (including operating policies and metrics), and outcomes.³ Virtually all sustainability frameworks relate to one of these three levels.

Strategies represent business frameworks to guide decisions. Developing strategies compatible with sustainability represents a radical departure for most Industrial Age enterprises. To do so, they require help. One source is sustainability frameworks that provide general strategic guidelines. One example is the four core strategies of “Natural Capitalism” (Hawken, et. al. 1999):

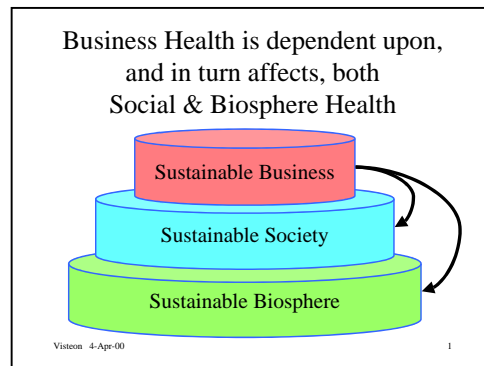
- radical resource productivity,
- biomimicry (e.g., closed loop production processes),
- new business models (c.f., "product as service"),
- restorative investments in natural capital.

The strength of Natural Capitalism framework is that it goes beyond resource productivity to require other strategies, like product as service business models, which together address all aspects of the naturalistic definition of sustainability (Senge, Seville, Lovins, Lotspeich 1999). The limit is that it neglects humanistic considerations (Ehrenfeld 2000). Other tools for developing strategy include The Natural Step's "funnel," which enables thinking through the timing of sustainability investments (Robert 199?) and von Weiszacker's (19??) “Factor X,” which encourages thinking boldly about improving resource productivity.

Organizational practices are where the "rubber meets the road" for any organization. Obviously what matters is action, yet actions that are episodic or temporary mean little. Sustained change in how an organization acts occurs only when there is a shift in the underlying operating policies, the (often tacit) priorities, pressures, and habits of thought and action that shape decision making (Forrester 1961, Simon 196?, March 196?). Operating policies are inseparable from culture and evolve only gradually over time (Schein 199?). An important component of operating policies are metrics. Because metrics are more explicit than other aspects of operating policies, they represent a natural point of focus for change efforts. Most of the sustainability frameworks focus on metrics -- for example, ISO14001, CERES, ZERI, WBCSD, Ecological Footprinting, and Life Cycle Analysis.

Ultimately, every organization must develop its own practices. It is impossible to transplant practices from one organization to another. Indeed much of the knowledge base of any organization is expressed through its practices. New practices can only be grown, enacted through how people think, interact, and go about daily life. Such innovation in how organizations function takes imagination, courage, persistence, patience, and often fair amount of passion. For example, this is why new environmental metrics are, by themselves, limited. Metrics must become integrated into daily activities in order to have impact. But establishing new measurement and assessment practices is often difficult because it requires new behaviors. So, often the rationalistic tool of new metrics requires a humanistic approach to achieve implementation. This is why we conceive of the sustainability challenge as fundamentally a learning challenge, a process that requires both “outer change” like new metrics and “inner changes” in taken-for granted assumptions and ways of operating.

Lastly, all change is ultimately aimed at new outcomes. Many companies are starting to advocate the “triple bottom line”-- attending to economic, social, and environmental impacts -- which is one way to begin to embrace the three worldviews. But it is just a start. It is easy for the triple bottom line to be seen as purely a rationalistic concept, in which case, like the problems with metrics noted above, it is unlikely to achieve broad implementation. Moreover, considering all three perspectives suggests that the three “bottom lines” are not equal. Rather, there is a natural hierarchy, as conveyed by the figure below (Morris 2000):



This also suggests that business outcomes for a sustainable enterprise must rest on intended environmental and social outcomes. In other words, unlike other corporate aims, certain outcomes are specified by how nature works: these are outcomes that are required for the health of larger natural systems. For example, the first three of the four “System Conditions” articulated by “The Natural Step” (Robert 199?) represent outcomes required for maintaining natural balances in the earth’s overall ecosystem:

- substances from the Earth's crust must not systematically increase in nature,
- (harmful) substances produced by society must not systematically increase in nature,
- the physical basis for productivity and diversity of nature must not be systematically deteriorated,
- we must be efficient enough to meet basic human needs (for all).

Obviously, the fourth of the system conditions is social. A challenge for future work is to articulate further guiding principles for socially sustainable outcomes, an area under-represented, in our view, within existing sustainability frameworks.

The following figure summarizes how the different sustainability frameworks interrelate:



Figure to be added (based on following)

Because the challenge of sustainability requires embracing all three worldviews -- rationalism, naturalism, and humanism -- we believe a diversity of frameworks is healthy. As our work through the SoL Sustainability Consortium progresses, we expect to continually utilize and test existing frameworks and, hopefully, contribute to their improvement.

Systems Thinking Primer for Natural Capitalism

Chapter 1: the Four Basic Shifts

Draft

September, 1999

**Peter Senge and Don Seville, Society for Organization Learning
Amory Lovins and Chris Lotspeich, Rocky Mountain Institute**

1. Overview and Goal of Primer

The aim of this primer is to develop a common "systems language" for thinking, communicating, and building shared knowledge for building environmentally sustainable enterprises and industries. As societies and organizations around the world gradually shift to seeing environmental sustainability as a strategic imperative, there is a growing need for universally accepted conceptual frameworks that are both intuitive and operational. Much of what is written today is either primarily data about declining ecosystems or proposed technical fixes, or debates about both. While this is important, it fails to lay a foundation for thinking together. Yet, thinking together is the first essential foundation if people and institutions must sustain deep change.

System dynamics is a body of theory and method that has been developing for forty years to enable practitioners and researchers to better understand complex, nonlinear social and environmental systems. Initially utilized by technical model builders, more recently it has been used as a basis for tools and processes aimed at accelerating organizational learning. Here the overall aim is to develop a common language and way of collaboratively conceptualizing highly interdependent policy and strategy issues. Repeatedly it has been shown that if people lack a common picture of the system within which they are operating, it is impossible for them to align their actions. Conversely, developing such a common picture enables natural coordination.

This Primer is meant to be used as a complement to the new book, Natural Capitalism (Paul Hawken, Amory Lovins and Hunter Lovins, Little Brown, 1999). Natural Capitalism proposes four core shifts which must be the constitutive elements of a strategy for sustainability for any enterprise. Each must be pursued if the enterprise's (or industry's) aim is long-term harmony with natural systems. Each is interdependent, creating both constraints and synergies with regard to the others. Yet, this interdependence is not easy to understand, nor its implications for specific policies and strategies. Failing to grasp this interdependence will cause firms to miss the opportunities for conceptual and practical breakthroughs, and can even leave natural systems worse off as a result of piecemeal efforts which appear sound but have long term negative consequences.

In this introductory Chapter, we show how the four basic strategies of Natural Capitalism do in fact comprise a systemic approach. We do so by developing a "five year old's" picture of how the human industrial system interacts with the natural environment. Using simple stock and flow diagrams common to system dynamics, a simple picture of the interaction of natural resources, production, goods in use, and waste generation is developed. It is then easy to begin exploring how these different flows and activities interact, and to see how the strategies of Natural Capitalism address all major facets of this system.

2. The Basics of Natural Capitalism

Natural capitalism -- what our economic system would look like if the ecosystem services were truly valued -- entails 4 basic shifts in business practice.

Shift #1: Radical Resource Productivity – dramatically increase the productivity of natural resources

Increasing resource productivity means getting more product out of each ton of natural material extracted. Changes in technology can create ways to stretch natural resources 5, 10, even 100 times further than they do today. And these resources savings can easily save money and increase profits.

Essential Argument: saving resources is possible, helping the environment and saving money

Shift #2: Biomimicry/Ecological Re-Design – shift to biologically inspired models

Shifting to a "closed loop" production systems – recycling, re-manufacturing, and industrial ecology. This is focused on the elimination of waste in the system. Such production models seek to emulate nature, where waste from any system is food for another system.

Essential Argument: Eliminating waste in production saves resources and money

Shift #3: Service and Flow Economy – Move to solutions-based business models

The overarching focus in on shift from producing and selling goods, which customers aim to acquire, to flows of services where meeting customers' real needs. In a traditional goods-based business model, the purchaser has ultimate responsibility for disposition of goods, hence most are discarded after use. In a solutions-based business model, the producer maintains ownership of goods produced, which encourages “take back” when the productive life is over, remanufacturing and recycling. This requires different expectations for both customers and producers, and fundamentally shifts the relationship between the two. Thus, basic economic arrangements support closed loop production and consumption models.

Essential Argument: Moving to leasing models shifts emphasis to providing satisfaction with as little material throughput and waste as possible in the entire economic system.

Shift #4: Investment in Natural Capital – reinvest in natural capitalism

Businesses must restore, sustain, and expand the planet’s ecosystems so that they can produce their resources and services even more abundantly. If business do not do so proactively, costs of reinvesting in natural capital will continue to increase with depleting stocks and rising ecological problems, leading to societal pressures through regulation and costly and inefficient governmental actions.

Essential Argument: This must be done to ensure that there will be resources in the future and to prevent a reputation of environmental irresponsibility; conversely, increasing environmental stewardship will provide market boost with growing consumer awareness .

3. Seeing the Elements of Natural Capitalism as a System

As a foundation for strategic thinking, what is most important about Natural Capitalism is the imperative to pursue all four basic shifts. Failure to grasp this can not only lead firms and industries to fail to realize important synergies but to inadvertently worsen the natural environment.

For example, many business readers will tend to see the first of these shifts, resource productivity, as really the "mother" of all the others. This tends to occur because "eco-efficiency" is becoming a hot topic in many businesses, and firms around the world are working to increase resource productivity. Yet, it is possible to improve resource productivity and cause natural systems to decline even further.

To see how this could happen, consider first that improving resource productivity means reducing costs of natural resource inputs to production. This is one reason that so many businesses are drawn naturally to eco-efficiency. But what then happens with the resulting profit increases? Will they be invested in further resource productivity innovations or, as the authors of Natural Capitalism hope, in the other three basic shifts? Or, will they be investing in just growing faster, perhaps in less ecoefficient businesses? In today's global capital markets profit flows to where the financial returns are highest, not where the ecological savings are greatest. So, higher resource productivity could ultimately lead to more natural resources extracted, not less. Moreover, improving resource productivity does not necessarily reduce the waste generated by the use and ultimate discard of the products produced more eco-efficiently. In fact, if increased resource productivity leads only to more growth, it is easy to see how total waste could actually increase.

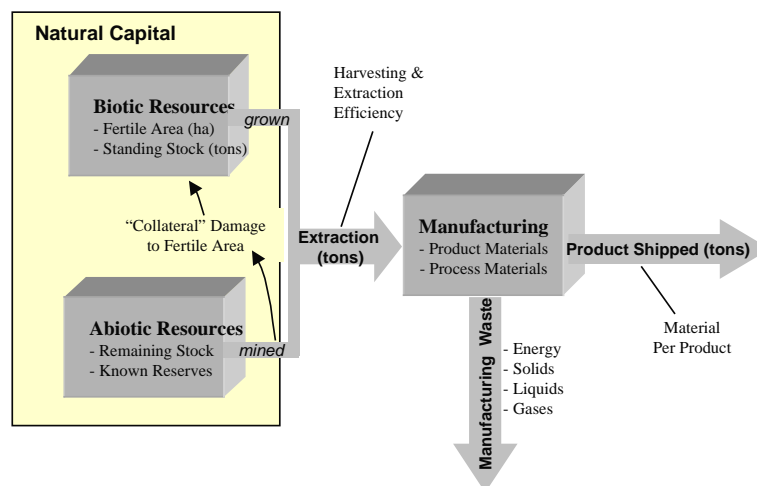
Ultimately, nature does not care how "efficient" the human industrial system is -- nature cares how much resources we extract, how much waste we generate, and what collateral damage we inflict on nature's own regenerative processes.

The nub of the issue is to what extent do we take into account the system as a whole. This is why there are four basic shifts underlying Natural Capitalism, not just one. The value of the Natural Capitalism framework stems from the way it, implicitly, addresses all major dimensions of how our industrial system interacts with nature. To see this, consider the following simple stock and flow picture of how the industrial production system nests within the larger natural system.

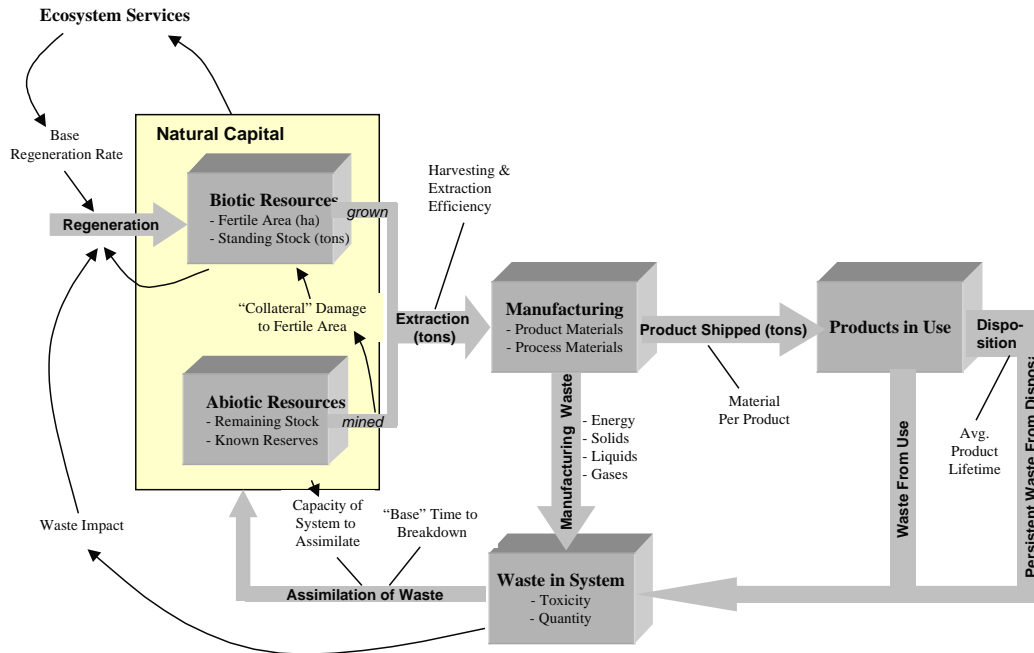
A Simple Stock-Flow Framework for Viewing the Industrial System

All industrial products are created based on resources extracted from nature. This flow of extracted resources (minerals, land, energy, wood, water, and so on) is processed through the many stages of industrial production to eventually become the flow of final goods produced and sold to consumers and producers. Natural resources are extracted in two ways: biotic resources like fish and timber are harvested, abiotic resources like oil and minerals are mined. These two different types of resources have different regenerative capacities: biotic resources are continually regenerated through natural growth processes, while abiotic resources, for all intents and purposes, are not regenerated, at least on a time scale relevant for human activities.

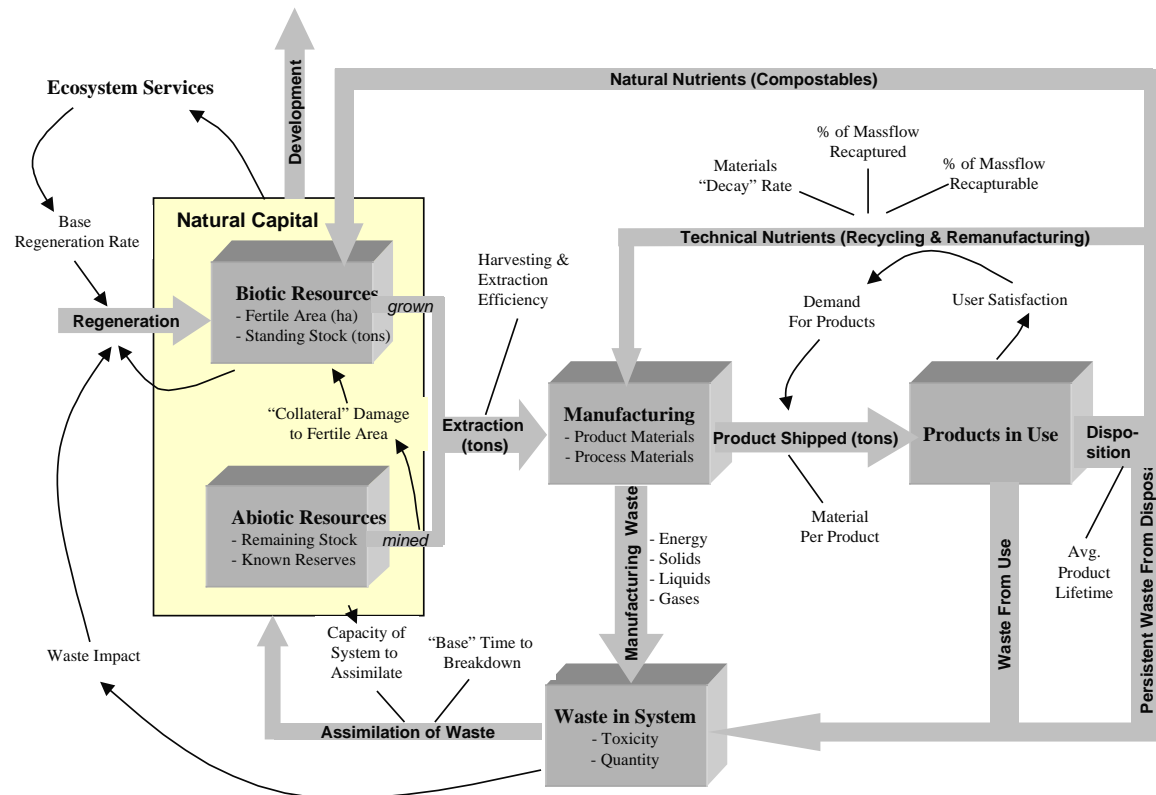
But actually only a tiny fraction of extraction becomes production -- less than 6% (by weight) when the entire industrial system is taken into account. The other 94% becomes manufacturing waste, the primary output of the present industrial production system. This is why there are large potential gains in eco-efficiency, increasing production output per unit of natural resource input. Increasing the ratio of production to extraction also reduces the proportion of waste generated as a by-product of production. This is why society wins and nature wins, at least in the short-term, from increased *resource productivity*, shift #1 of Natural Capitalism.



But, this is only one facet of a larger system. Produced goods become goods in use, the totality of all "the stuff" owned by consumers and producers, from washing machines and PC's to airplanes and machine tools. And, of course, this stuff goes somewhere once its productive lifetime is over. Typically, it too becomes waste. Moreover, other types of waste, primarily biological waste, are generated from the use of the goods, such as emissions from automobiles and industrial smoke stacks. All three of these sources of waste -- from production, use, and eventual discard of goods -- accumulate in nature, some for a very long time. Plus, accumulated waste is not benign -- much of it interacts with nature's own regenerative processes, thereby reducing the rate at which the stock of natural resources replenishes itself. All of this suggests a larger picture, reflected below.



Expanding our view of the system further, products in use can also be recycled back into the manufacturing system as either raw material that requires re-manufacturing or as directly reusable components. The amount of material that can we recycle is a function of the % of a product that is physically recyclable, the % of those products that are re-captured through a distribution system, and the number of times the material can be recycled before its structural integrity decays. In addition, waste can be avoided by developing products out of directly compostable materials, where material returns almost directly as productive nutrients.



Our other expansion of our system's view is to include the other major source of loss of natural resources which is the conversion of the land base to "development", usually industrial and urban use, and the resulting loss of biotic natural resources.

Now, we can see where the other three "basic shifts" of Natural Capitalism come in, and why they are so important. *Ecological re-design*, shift #2, promotes the adoption of closed loop systems, just as occur in living systems. Closed loop industrial systems include industrial ecology, where the outputs of one manufacturing process are used as the inputs to another (reducing waste) and recycling/re-manufacturing, which re-captures products after consumer use (reducing waste and raw material use). Moving to a *Service Flow Economy*, shift #3, supports the ecological re-design by promoting a change in the basic producer/consumer relationship whereby the producer would maintain ownership of the physical material throughout the life of the product. The advantage of this relationship is that it creates incentives favorable for product recycling and re-manufacturing because the product must be returned to the producer after use by the consumer (A powerful illustration is the highly successful new Xerox 265 digital copier, whose 200 parts are 96% recyclable.) In addition, because the producer and customer relationship is now focused on providing services rather than products, it would be in the financial interests of the producer to find ways to provide those services with as little material use as possible. Lastly, reinvesting in *natural capital*, shift #4, focuses everyone's attention on conserving the stock of natural resources and nature's regenerative capacity, including the losses of natural resources to "development," as occurs when we pave over forests or wetlands. Ultimately, the entire system depends on this regenerative capacity and the ecosystem services provided by the current stock of natural resources -- our natural capital.

4. Using the stock and flow framework as a guide to investigating a product flow system

The following section is offered to illustrate the use of the simple stock-flow framework. The next step in developing this framework is to actually put it to use in SoL member companies and discover together how it is best used in different settings. These “reflection” questions can either be asked generically about the larger system, or about specific products systems within the larger system.

The stock and flow framework lends itself to asking questions about how the system is behaving over time and how intervening in different places in the system can change that behavior. Some of these are questions are:

What is the current state of the system? Can we map out the stocks and flows relevant to a particular product or family of products? How have the stocks and flow been changing over time?

Are there any “signals” in the system that are causing us to think that change is important? (in other words, what are we seeing around us that is motivating the desire for change in the way our resource products system works?)

for example,

1. The stock of fertile area and available resources have been declining over time for many resources
2. The stock of waste in the system is increasing, leading to concern about the concentration of toxins in the environment

What are our “goals” for this system? (How would we like to see the stocks such as natural capital, waste, and products in use, to be behaving over time?)

for example,

1. We would like the stock of fertile area and resources (particularly those with a fast natural generation rate such as trees, fish, etc) to be stable or increasing to ensure sufficient resources for the future and health ecosystem services.
2. We would like the stock of waste to be stable or declining (both in amount and in toxicity) to both protect human health and the health of the eco-systems.
3. We would like a flow of products and services from manufacturer to consumer that meet our needs

Where are the potential levers in the system?

What we ultimately would like to change in the a system is the level in the stock, such as the products/services enjoyed by consumers, the amount of waste in the system, and the resources available. The only way to change the level of stock is to change the rate of the flows. To increase the level of a stock, one can decrease the outflow, increase an inflow, or both. The start of looking for leverage points in a systems is to understand what rates causes the system to move in a desired direction (and how it might cause other effects

through the system!). In examining a particular product flow chain, each of these rates could be researched to understand what the relative cost/benefit of intervention would be.

for example,

To increase the stock of natural resources, we could....

- increase the regeneration rate of the natural resources
 - by increasing the fertile area available for regeneration
 - by decreasing the conversation rate
 - by decreasing the waste/fertile area ratio, which is reducing the growth rate (example: acid rate has been shown to decrease the growth rate in the forests of northern New England, pollution in harbors reduces the ability of fish to regenerate, etc)

- decrease the extraction rate (tons of material) by:
 - decreasing the material shipping as products, by reducing the material per product or the number of products sold/year (which can be done by increasing the lifetime of the product, or reducing demand for products)
 - decreasing the amount of the raw material that is lost as waste in the manufacturing process
 - increasing the recycling of material (both by-product and primary product material) which would reduce the amount of virgin material (from extraction) required. Recycling can be increased by increasing the fraction of the product that is recyclable, increasing the % of the products that are recyclable that are re-captured through a distribution system, or by increasing the number of times a product can recycled before the material degrades.

To decrease the stock of waste, we could....

- decrease the waste flow (and its toxicity) by:
 - reducing the manufacturing waste and associate energy waste (both of the raw material itself and all the by-products)
 - decreasing any waste from the product while it is in use
 - decreasing the waste from products being disposed (longer product life, more recycling, etc)

- increase the assimilation rate of the waste back into the environment
 - by using materials that have fast natural breakdown rates (biodegradable materials, etc)
 - by using materials that are not toxic while they are in the environment
 - by making sure that we are not exceeding the capacity of the system to breakdown the waste and creating a “backlog” (for example, the concentration of biodegradable waste from large scale animal farms often exceed the capacity of the local environment, creating problems)

Collaborative Innovation for Sustainability Projects

SoL Sustainability Consortium

April 28, 2002

Background

At the Collaborative Innovation for Sustainability meeting in Aspen in February 2002, twelve SoL companies came together to explore the question:

In building more sustainable businesses, what can we do, individually and collectively, to shift from compliance, and incremental and process improvements, to innovation – new more environmentally sound products, new ways of bringing products to market, and new ways to create demand pull for such products? In other words, how do environmental and social well being become integral to what drives business growth?

Participants met for two and a half days, and on the final morning of the workshop suggested several project ideas to continue the work begun in the workshop. In the weeks following the Aspen meeting, Peter Senge from SoL and Kate Parrot from RMI followed up with participant companies, soliciting feedback on and gauging interest for the various project ideas.

What emerged from these interviews was a focus on three shorter-term “starter projects” and three longer-term projects, including two new projects (in addition to DTE’s existing Collaborative Customer Provider Learning project). The basic idea is to get to work on the short term projects right away. These embody important questions and they will give us an opportunity to learn how to learn together. The two new longer term projects are “action projects,” are more complex, and will require more time to develop well thought out plans. We propose to start working on these now with the aim of having projects plans within 3-6 months.

These ideas were reviewed at the April 8-10 Sustainability Consortium Meeting hosted by Nike, and people agreed that they represented a promising way of getting started. The purpose of this memo is to summarize where we are, so that the Steering Committee that we agreed to form on April 10 can agree on immediate aims and coordination requirements. A co-ordination budget for these projects will then be developed once the Steering Committee is formed.

Overview of Collaborative Innovation for Sustainability Projects

Three Short-term Projects

1. **Storytelling:** Connecting to what people truly stand for and their work at their best provides a generative context for sustainability innovations—a far cry from the typical guilt and problem-fixing mindset. Sometimes it is just a reframing of questions and problems that can motivate internal stakeholders. How can we tell our stories in a way that inspires us to innovate for sustainability? Also, what are the stories, visions, and scenarios we want to tell about ourselves?
2. **Leadership Networks for Sustainability:** How are different companies going about developing internal leadership networks for sustainability? What are some strategies and practices in use? What are the success stories in this area?
3. **Tools and Strategies:** What are specific tools and strategies being used for incorporating sustainability into product concept, product design, and bringing products to market? Examples are John Ehrenfeld's "Dimensions of Change Matrix," the Natural Step framework, and Harley's Sustainable Footprint Matrix (under development).

These short-term starter projects are aimed at building momentum through collaborating to discover and share useful elements of our overall strategies. The projects would rely on phone and live interviews with participant companies, and would be completed within 3-6 months, in time for the fall 2002 SoL meeting (date and venue to be determined)

Three New Long-term Projects

- **Collaborative Customer-Provider Learning:** DTE began in the fall, 2001, to organize a series of meetings with prospective customers drawn from the SoL Sustainability to explore the market case for distributed generation. The first cycle of meeting is now concluded, and results and implications are being analyzed by DTE and the project team. In addition to insights for DTE regarding its strategy and business model, we are studying the generic process of getting customers and providers to learn together how to accelerate the market penetration of more environmentally sound products, and other similar projects may be initiated in the future.
- **Intelligent Materials Pooling:** Considerable work has been done to understand sources and flows of harmful chemical materials through the industrial system. So, far, efforts to reduce particular materials have been undertaken by individual firms. How can we pool our purchasing power to collaborate with chemical producers to eliminate particular chemicals entirely from all product chains? This includes both materials embodied in final products and others used in manufacturing processes.
- **New Designs, New Markets:** Growing markets for new types of products will require positive reinforcing feedback loops that both increase demand and supply. How can such virtuous cycles be nurtured?

In particular, there is a broad consensus today that in many settings "green" product labels by themselves can imply to customers lower quality and higher cost. How are different companies confronting this dilemma today: on the one hand they want to develop more environmentally sound products; on the other they do not want to jeopardize business benefits from such products?

Also, what are different companies doing to better understand and develop latent customer demand for sustainability? Put another way, how do we build emotional bridges between people's concerns over the environment and sustainable product purchasing decisions?

STARTER PROJECTS

Storytelling Project

Design and Intent

You many remember the speech, read aloud at the April SoL meeting in Portland, given to a conference of advertising executives by the VP of marketing of Unilever's UK frozen foods division. (It's attached if you haven't heard it.) Many of us thought it was one of the most positive, well-articulated pieces on a company's position on environmental sustainability, social responsibility, and green marketing we'd heard in a long time. And it was a series of beautifully told stories.

How did the VP do it? Christine Drury from Unilever, who was present at the Aspen meeting, told us. He *didn't write it out*, he voice-recorded some of his thoughts, and a company speechwriter later helped craft it into a polished speech. This was key to capturing the heart and the natural flow of his message.

We tell stories to inspire, to educate, and to entertain. We share our accomplishments and challenges at coffee bars and in boardrooms. We talk about our companys' missions, core values, and culture. We think of a better future, and envision how our companies help create it. Our stories can infect our colleagues with passion and initiative. They're the stuff that makes legacies and myths.

The focus of this project is to learn how to tell compelling stories like this one, both internally and externally, and to record several of them in video and written form. We'll look at the elements of a good story, how best to capture stories, and *most importantly*, how they can be harnessed to move us towards sustainability.

Here's what one organizational change consultant has to say about storytelling:

I believe we live our lives by the stories we tell ourselves and tell others. Change the story and life changes. As an organisational change consultant and change management lecturer, I find the approach immensely appealing. Organisations often seem to run on a few core narratives . . .

Stories have the power to release and change; if new story elements can be introduced into a problem-saturated narrative, remarkable things can happen.

Where do these new story elements come from? I find the best ones come from that which was previously silenced - the forgotten story remnants left on the company cutting board. Storytelling rights should be given to everyone in an organisation, and not just the PR group or the top executives. I think this makes for less insular and more adaptive organizational functioning.

(From Interview with David Barry, PhD, Management and Employment Relations Department, University of Auckland.
<http://www.home.aone.net.au/stories/nd4stori.htm>

Process

We propose to conduct a brief survey of storytelling and story-capturing skills such as those used by the Digital Storytelling Center of Berkeley and other digital storytellers. We'll select several stories from ideas submitted by project partners, and brief the tellers on how they can best deliver their stories. We'll capture the stories in video and written media and make them available to all SoL members via email and website. We'll also summarize our research findings on storytelling and story-capturing skills. We'll collect information from the storytellers and the website (if available) on how these stories have been used inside the company and among other SoL companies to inspire innovative change.

Leadership Networks for Sustainability Project

Design and Intent

The leadership networks project had overwhelming support from participants in Aspen meeting. Many people talked about the great challenge of educating and inspiring hundreds or thousands of people to take a proactive, leadership role in sustainability efforts.

We heard about what some companies are doing to develop leadership networks— sending people to educational seminars on sustainability (Nike and Plug Power), creating performance incentives (BP), and educating the CEO (DTE). People were interested in knowing more about what others are doing, sharing successes and challenges, and brainstorming new approaches to developing leadership for sustainability.

The leadership networks project will document these and other strategies, both from SoL member companies and from other companies that have successfully nurtured leadership for sustainability. This project may be highly interrelated with the Storytelling project.

Process

We'll rely on phone and live interviews for the leadership networks project. We'll aim for collecting information from the companies who are part of our collaborative effort, and from other companies who SoL members have personal contacts. We'll identify successful strategies, and, *just as important*, those that have failed or backfired. We'll capture stories in written and video form and present to the SoL community at the fall meeting.

Tools and Strategies Project

Design and Intent

Once people are inspired to work towards sustainability, what concrete tools and strategies can they use? There are some well-known and more-commonly used tools and frameworks like Design for Environment (DfE), and ISO14001. Some organizations (like Green Biz— www.greenbiz.com) have attempted to catalog some of the sustainability tools available to businesses. But there are also many that are not widely known to, or commonly used by, sustainability practitioners. And sometimes the opposite is true—practitioners know of many tools and approaches to implementing sustainability, but it's not clear which are the most robust, have the best track records, and are the most accessible and easy to use.

Process

The project will begin with a brief survey of existing tools and toolboxes (such as the Greenbiz website toolbox), and will tie in with the Storytelling project to document the specific tools, frameworks, and strategies people have used to implement sustainability initiatives. We'll catalog the tools and strategies we find according to type (e.g. used for product concept, product design, or bringing products to market), and document findings such as: ease of use; ability to achieve desired objective; level of technical expertise required to operate; and amount of staff time required to implement.

This will be by no means an exhaustive survey of all available tools and strategies. But it will allow us to quickly gain an overview of the approaches that might be of most use to SoL members. As much as possible, we'll document the stories of people who have used the tools, and make their information available to others who could benefit from personal information and advice.

NEW LONGER TERM PROJECTS

Intelligent Materials Pooling Project

Design, Intent, and Process

We have already begun the first steps in developing a design for this project, with initial communications among project partners to target potential chemicals for elimination. (See attached “Getting Started” memo and spreadsheet.) This project’s scope is less well-defined, as it is a complex, long-term endeavor. However, in time for the fall SoL meeting, we would like to have a definitive idea of which chemicals and materials we want to address, how we want to work together, and a project plan and budget.

For now, we suggest that the initial Collaborative Innovation coordination budget (to be developed) support these initial coordination activities, along with some time for this work which will be billed from the master SoL Sustainability budget to support time of Joe Laur and Sara Schley (the overall Sustainability Consortium coordinators). Hours will be billed as used, up to an agreed-upon maximum amount set by the Collaborative Innovation Steering Committee.

Note: We will seek additional funding for this project from sources such as the EPA’s Persistent, Bioaccumulative, and Toxic (PBT) Program and other private foundation sources. In our experience, this type of collaborative project with potential for a high degree of positive environmental impact is a highly fundable activity.

Longer-term Green Marketing Project

Design, Intent, and Process

The Green Marketing project is also complex and potentially long-term. It is the less well-defined of all the five projects in terms of next steps and outcomes. This project will begin, therefore, with a survey of SoL members to identify the most pressing questions and challenges about positioning green products in the marketplace and connecting with customers to create demand for green and sustainably produced products. RMI staff and Jacqueline Ottman, a nationally recognized expert on green marketing issues, will facilitate this process.

The initial Collaborative Innovation coordination budget will support these information-gathering interviews, and coordination to determine if, and how, project partners want to move ahead. As with the Intelligent Materials Pooling project, hours will be billed as used, up to an agreed-upon maximum amount. Next steps could include surveys of best green marketing practices, research and preparation of a green marketing strategies white paper, and ongoing roundtable discussions at future SoL gatherings.

¹Examples include ISO14001, CERES, World Business Council for Sustainable Development (WBCSD), The Natural Step (TNS), Natural Capitalism, Gunter Pauli’s Zero Emissions Research Initiative (ZERI),

Factor X, Wakenagel's Ecological Footprinting, Life Cycle Analysis, and various approaches to TQEM (total quality environmental management).

² An earlier and similar frame, focused on balance among the "economic, ecological, and anthropological" was developed as part of the Thalberg seminars in Sweden in the mid-1980's.

³ This way of integrating frameworks was suggested originally by Ray Anderson and relates closely to one proposed by Karl-Henrik Robert, founder of The Natural Step: who suggested four levels: principles for sustainability (outcomes), principles for sustainable development (strategic guidelines), actions, and metrics (combined in organizational practices). Henrik-Robert also identifies basic science that suggests how the biosphere and society are "constituted" as a fifth level. We omit basic science here because it is important to all human activities, not just sustainability.