



Bridging Sustainability

Growing Triple-Bottom-Line Businesses through Learning, Change, and Leadership at Green Garage, Detroit

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Abstract: *This paper presents an action-based research study on growing Triple Bottom Line (TBL) small and medium enterprises (SMEs) in Detroit, Michigan. The study was done in collaboration with a business incubator, the Green Garage, and focused on three different businesses within the Green Garage: the Social Club, a hair salon and barbershop; the Hilberry Theatre, a student-run theatre at Wayne State University; and Fresh Corner Café, a fresh food delivery business. While working with these businesses, the team co-created a measurement performance system to improve the sustainability performance. Through working intimately with these businesses, our team came across common characteristics integral to growing a TBL business: transformational leadership, a culture of collective learning, process innovation, and organizational change management. As a result, businesses were able to start performing and tracking sustainable behaviors and processes.*

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- Noam Kimelman, owner of Fresh Corner Café
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- The Green Garage Community and our friends and family

Executive Summary

From early 2012 through the spring of 2013, our team of four master's students from the University of Michigan's School of Natural Resources and Environment (SNRE) had the fortune of working collaboratively with Green Garage Detroit to answer: How do you build a business with a culture of the triple-bottom-line (or TBL, a holistic approach that focuses on overall social, environmental, and economic impact)? We were asked to investigate the feasibility of evolving a measurement system across the three dimensions (3D) of the TBL to serve as a tool for growing a TBL business and successfully integrating TBL ideas into the heart of the business to define its operations, growth, and margins.

Green Garage is a green business incubator that mentors the growth of small and start-up businesses, and encourages organic and natural growth so that these businesses will have a lasting positive impact in their community and environment. From our experiences, interviews, meeting participation, and community integration within the Green Garage, our group attempted to create methodologies and tools to assist start-up and small-to-medium enterprise (SME) business owners with internal TBL reporting and build the capability maturity of sustainable processes within a business.

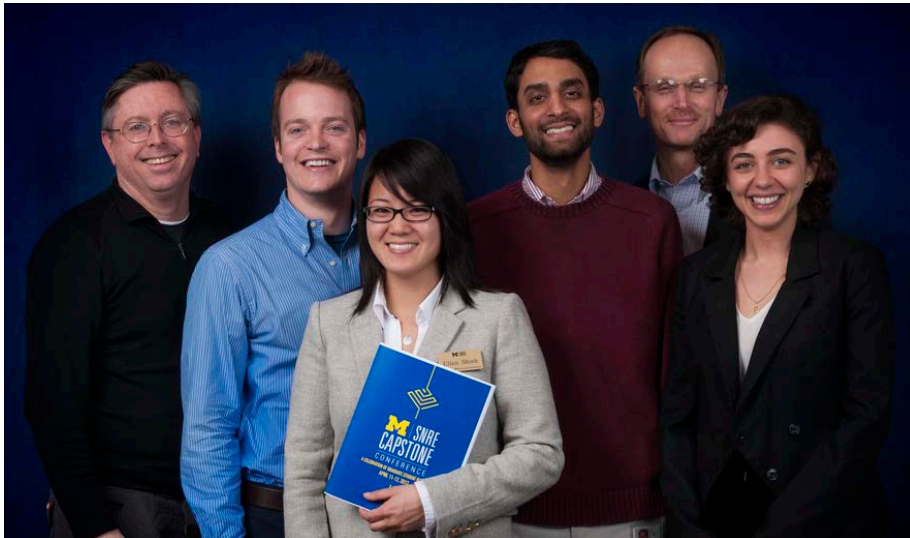
Using the theories behind Peter Senge's Learning Organization, we approached Green Garage and its affiliated businesses by identifying the organization's purpose and vision through their guiding ideas; methods, theories, and tools; and innovations to Infrastructure. At the Green Garage, our team worked with four businesses we characterized as Learning Organizations based on their adoption of the above principles. These businesses are: the Green Garage, Hilberry Theatre, Fresh Corner Café, and the Social Club Grooming Company. The team worked intimately with each business to develop sustainable processes through a learning process developed at the Green Garage described by a Natural Change Curve. This curve identifies a natural learning and change process to help businesses successfully integrate sustainable behaviors, through multiple iterations of awareness, understanding, trial, and adoption.

From working with these Learning Organizations for one-and-a-half years, our team discovered common dimensions that are necessary to successfully build and integrate sustainable behaviors into a triple-bottom-line business. These components include:

- Transformational Leadership
- Becoming a Learning Organization: A Culture of Collective Learning
- Process Innovation, and
- Effective Change Management.

These components, we found, are common dimensions that could be used across any kind of start-up or SME, regardless of field, to integrate social and environmental decision making while also managing their knowledge and growth.

The four Learning Organizations in this study were able to successfully integrate sustainable behavior by using the key ingredients through multiple iterations of the natural change curve, and are still working to continuously improve the capability maturity of processes within the organization. We are excited to share the stories and experiences we have accumulated over our year and a half of work at the Green Garage, and hope this report can serve as a guide to building and integrating sustainable behaviors into a TBL business.



From left: Tom Brennan, co-founder of Green Garage; Justin D’Atri M.S. ‘13; Ellen Shieh M.S. ‘13; Prashanth Gururaja M.S. ‘13; Bob Weins, Green Garage; Marwa Kamel M.S. ‘13

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Part I: Background

a. Research Question

b. Motivation and Study Setting

Research Question

Numbers of studies and books have been written on strategies of integrating triple-bottom-line (or TBL, a holistic approach that focuses on a business' overall social, environmental, and economic impact) methodologies into large companies, but little has been studied on the necessary building blocks to develop a TBL business. Corporations and large multinational companies have the capital to purchase technology and services from consulting groups to make recommendations on how to make a business more environmentally and socially sustainable. Smaller businesses implementing TBL strategies, however, struggle to stay afloat to ensure economic growth.

This study attempts to build on the few existing studies that have been done on TBL growth within start-up and SMEs, and examine key components needed to grow TBL businesses by answering the research question: How do you grow a triple-bottom-line startup or SME? From January 2012 to April 2013, the SNRE Green Garage Master's Project team collaborated with a green business incubator and three SMEs in Detroit, MI to conduct this study. We hope that by explaining the four key components to growing a TBL start-up business or SME—transformational leadership, collective learning, process innovation and effective change management—SME business owners and employees will be guided with ways to successfully grow their environmentally and socially responsible business.

Motivation and Study Setting

Detroit, The Motor City

“Financial emergency,” “crisis,” and “struggle” are words that are often associated with the economic troubles that have haunted Detroit over the last few decades. Once one of the fastest growing cities in the nation, Detroit is now associated more with chaos than with prominence. Nicknamed “The Motor City,” Detroit has fallen on hard times with growing crime rates resulting from the impacts of economic recessions in the 1980s and most recently in the early 2000s. Scott Martelle summarizes in *Detroit: A Biography*, the history and development of Detroit's economic infrastructure:

At the turn of the century, Detroit had been home to a diverse and vibrant mix of industries, from stove making to shipbuilding to the manufacturing of railroad cars, pharmaceuticals, cigars, and clothing. But by the early 1920s, Detroit had effectively become a one-industry town, its massive growth dependent on the explosively successful—but recession prone—auto factories. Even in good times auto companies oversaw inconsistent production schedules. [And] as one of the key girders of the American economy... when the economy collapsed, Detroit fell with it, attaining a level of economic paralysis worse than most of the rest of the nation—establishing a trend that continues into the twenty-first century.¹

Similar to the theory behind “crop monoculture,” or the practice of planting one crop for profitability, Detroit's reliance on heavy industry—and most recently, the automobile industry—has led to a heavy reliance on a “business monoculture,” a region's economic environment reliant on one-industry.² What once attracted many to live and work in Detroit was the very reason many chose to leave this city behind. Now, images of Detroit's abandoned factories, desolate buildings, and decaying houses have become the city's recent claim to infamy. The “fabulous ruins of Detroit” have sent a pulse

of unintentional and artistic allure throughout the world, creating a fascination and wonderment of what impact the recent economic downturn has happened to this once flourishing city (Meffre).

Even with Detroit's reputation of "crime, blight, and economic decline," a new class of city leaders known to locals as the "creatives" is beginning to drive the Detroit economy from a monoculture industry to an ecosystem of creative entrepreneurs.³ This movement is in part due to the "15 by 15" initiative, a "talent strategy" to attract "15,000 young, talented households to Greater Detroit by 2015," supported by the Detroit non-profit the Hudson Webber Foundation.⁴ Part of the revitalization of this city is Green Garage Detroit, which identifies itself as "a business enterprise, and a community of people dedicated to Detroit's sustainable future."⁵ Green Garage is dedicated to helping entrepreneurs make a lasting impact in their community through a triple-bottom-line (TBL), which measures the "social and environmental impact of an organization's activities... to its economic performance."⁶

Green Garage Detroit: Business Incubation and the TBL

Starting in the late 1950s, business incubators began operating as a means to offer a "mix of business assistance services" and to "nurture the development of entrepreneurial companies."⁷ Many of these incubator companies emphasize acceleration, expediting the process of business development of start-up and SMEs. Green Garage, however, takes a different approach. Departing from the "traditional" sense of business incubation, Green Garage mentors start-up businesses and SMEs to build community in an "intimate, deliberate, [and] unhurried" manner.⁸ Realizing that Detroit has experienced highs and lows with a monoculture industry, Green Garage hopes that small business entrepreneurs will become the future of Detroit and develop a business community that not only focuses on the economic success of the city, but also increases positive social and environmental yields. Through their work, Green Garage has created opportunities for businesses to become engaged in the community, and create a mutually beneficial economic environment within Detroit.

Inspired by Dr. Ikujiro Nonaka's studies on Knowledge Management, the idea of using knowledge as a business' competitive advantage, Green Garage identifies with Dr. Nonaka's idea that businesses are "not machine[s] but... living organism[s]" which allow businesses to have "collective sense of identity and fundamental purpose" in their environment."⁹ Green Garage uses the "living organism" approach and interprets the surrounding economy, environment, and community as an ecosystem that requires a diverse array of organizations and groups to thrive. Green Garage is a for-profit, non-traditional company in that it is mission-driven, fitting the definition of a hybrid organization.¹⁰ Since its inception, Green Garage has been conscious of its environmental impact, starting with their building design and construction. During the time of construction, Green Garage renovated former Model T showroom, produced less than two dumpsters of waste to landfill, and operated with net-zero energy all while collaborating with over 200 volunteers within the community.⁵ Green Garage has now been open for business for over a year, and has mentored a few dozen start-up businesses and SMEs in integrating and growing with a TBL. Green Garage's active participation in values of a TBL business makes it a prime example of a successful business growing with a TBL.

Part II: Understanding, Theories, & Research

a. Sustainability Reporting

b. Sustainability Capability Maturity Model

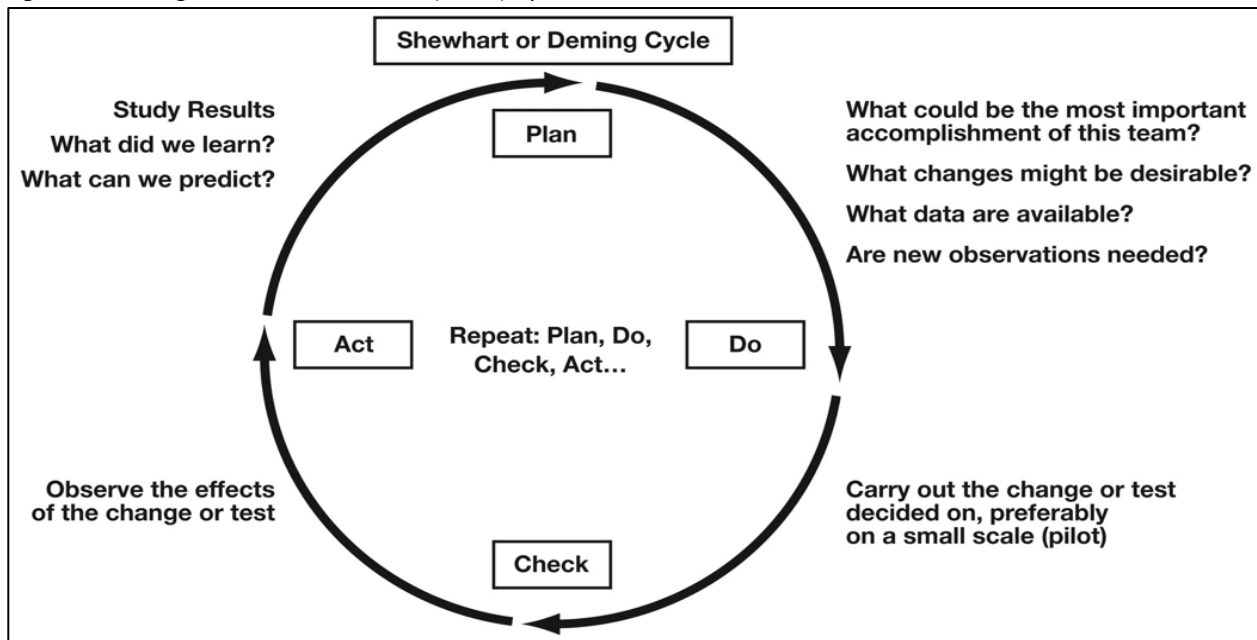
c. Process Stability in Organizations

d. The Learning Organization

e. Action-Based Research

Our initial approach to this study was to find ways to develop metrics and measurements for businesses in Green Garage, and believed in internationally renowned management consultant Peter Drucker’s philosophy that “If you can’t measure it, you can’t manage it.” Using this perspective, our team first attempted to identify indicators for business systems to measure and improve the sustainability performance of a business. Our team hoped to identify various indicators of business processes to develop a performance measurement system, defined as “a set of metrics used to quantify both the efficiency and effectiveness of actions.”^{11,12} Our team envisioned that these metrics would capture the baseline of the business in terms of waste, water and energy use, social connectedness and impact, and financial viability. From these metrics, our team would then analyze and identify key areas with poor performance, communicate the findings to the decision maker, and finally design a new process for improvement. In this process, our team expected to conduct multiple iterations to improve sustainable processes within businesses. This approach is similar to William Edwards Deming’s Plan-Do-Check-Act (PDCA) cycle for continuous improvement, a cycle that emphasizes an iterative four-step method for continuous improvement in performance measurement systems (See Figure 1). Our team quickly realized, however, that the businesses at Green Garage did not have the capability to have metrics or measurements to assess the progress of their sustainable processes because these businesses were at different stages of development. Rather than taking the approach to design metrics and measurements, we decided to look at each business and their capability of adopting behavior and processes for each bottom line of the TBL—economic, environmental, and social bottom lines.

Figure 1: Deming’s Plan, Do, Check, Act (PDCA) Cycle



The team was well aware of the many existing performance measurement systems that can be used to quantify the financial bottom line such as QuickBooks and the Balanced Scorecard. As master’s students in the sustainable systems field of study, our team was confident in the group’s capability to assess environmental impacts because of our knowledge in life cycle assessment (LCA), systems engineering, and eco-efficiency indicators used in environmental operations. Our team was not confident, however, in quantifying social impact of businesses. Assessing social impact was particularly important to our findings because our client, Green Garage, thrives through the surrounding and

internal community, claiming that “the formation of this business community is the most important thing we will do in our lifetime,” says Tom Brennan.

To properly quantify the impact of building relationships and the power of a supportive community, our team familiarized ourselves with other business incubators in cities such as San Francisco, Los Angeles, Chicago, and New York City. None of these incubators, however, had a community similar to the community at Green Garage. Furthermore, a team member became certified in Global Reporting Initiative (GRI), an established sustainability reporting system, which still seemed to be too cumbersome for our partner businesses to implement. From these observations, our team understood that in order to be effective and understand how to guide businesses in adopting sustainable behaviors and procedures, while simultaneously increasing their social impact within their community, we had to integrate ourselves into the Green Garage community. Our team maintained our presence on a weekly basis throughout the year attending Green Garage functions and incubation sessions of several businesses.

Before we began working exclusively with any business, our team needed to identify our group’s values, mission, and goals. On a biweekly basis, our group met to share new findings, literature, and knowledge that contributed to our group’s vision, mission, goals, and philosophies. Below is our team’s mission statement:

Our mission is to become aware of the culture, economy, community, and environmental needs of Detroit and how these factors have influenced the growth of small businesses and startups in Detroit. We will learn about the SME and startup community, and believe that to help these businesses meet present and future needs, businesses must experience natural and slow growth. We believe that the ability to measure sustainability performance within a business will lead to business decision that will continually improve a business’ economic, social, and environmental impact.

We hope that after learning about the current operations, goals, and vision for implementing sustainability measures of each business, we can identify management process for small businesses. To guide these businesses, our team identifies ourselves as a learning organization, an organization that feeds on collective learning and collaboration in becoming educated and versed in sustainable business decisions. We hope that through working with other businesses we can immerse our learning culture into these businesses.

It was important for the group to use existing literature on internal and external reporting, communication, organizational management, change management, social valuation and entrepreneurship to successfully engage with the Green Garage community and its businesses and bridge the missing links between theories and practice.

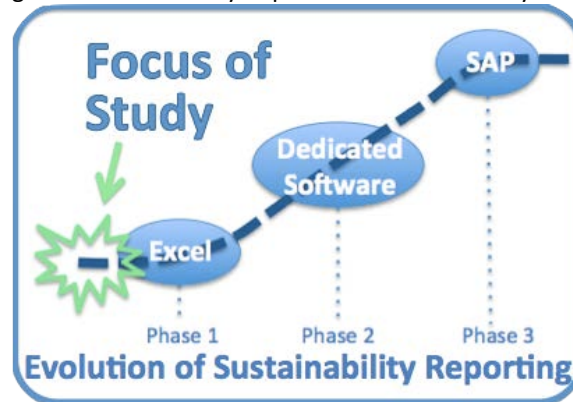
Sustainability Reporting

Currently, there exists a diverse set of sustainability reporting methodologies. From the Global Reporting Initiative (GRI), the Dow Jones Sustainability Index (DJSI), to the Benefit Corporation (B Corp) Impact Assessment, all existing methodologies are geared towards businesses that have some level of

economic stability. These reporting methods all serve as different ways to communicate organizational performance for internal and external stakeholders, usually investors. Many large organizations have created entire departments to track and report their organization's environmental and social impacts by reporting lists of environmental and social indices, metrics, and explanations. Although the list of measures is long, many important aspects of sustainability continue to be difficult to quantify, such as social impact or employee engagement through organizational learning. Moreover, core principles of environmental sustainability are often left out of corporate sustainability reports because they are not standardized across industries.

The methodologies such as GRI, DJSI, and B Corp take dedicated information systems to keep a company's data tracking in order. Figure 2 below illustrates how the information systems that form the foundation of an organization's sustainability reporting evolve. The first reports can be generated using excel, and as a company's reporting capabilities mature, the company may opt into use dedicated software to track data for their sustainability reports. The most mature sustainability systems utilize robust Enterprise Resource Planning (ERP) software systems to monitor sustainability across large organizations. Since the focus of this study was working with small business owners to improve their TBL performance, our team was most interested in how startup businesses and SMEs could achieve Phase 1, allowing businesses to reach a point where business owners could use Excel to track their sustainability performance and progress.

Figure 2: Sustainability Report and Information Systems



Unfortunately, all the existing methodologies for reporting sustainability prescribe laborious ways to track “standardized” metrics, while giving little direction on how to even begin performing sustainably. The existing reporting methodologies were created for large corporations and are beyond the scope of utilization by the majority of startup businesses and SMEs. In summary, the literature suggests there is still a significant gap in the research on methodologies for improving sustainability performance for SMEs and startup businesses.

Sustainability Capability Maturity Model

The Sustainability Capability Maturity Model is adopted from the original Capability Maturity Model (CMM) created in the 1980's at Carnegie Mellon for assessing the development of advanced avionic software development in the Air Force.¹³ Even though this model was first created 30 years ago before organizations were focusing on sustainability initiatives, the CMM provides a framework for an organization to conceptualize steps to the maturity of various capabilities and processes. The CMM framework can be utilized by businesses to conceptualize the capabilities of traditional systems like

software development, accounting, and logistics, or more unique TBL capabilities such as waste reduction processes and social impact. Most importantly, serves as a great perspective when looking to grow TBL business because the model allows for clear communication within the organization of the vision and maturity of sustainability capabilities.

Figure 3: Sustainability Capability Maturity Model



When small business owners begin to integrate sustainable behaviors and processes into their organization, the first step is to implement sustainability principles into their mission and values. Processes will then mature through iterations of learning stages in the Natural Change Curve to achieve an “optimization” level of a process’ sustainability capability (see figure 3). TBL startup businesses and SMEs that value sustainability first begin on the Sustainability Capability Maturity Model by not performing any sustainable processes, but over time mature their sustainability capability as they implement process improvement plans and begin tracking their progress to achieving economic, social, and environmental yields.

Process Stability in Organizations

At the beginning of this project, our team approached the businesses within Green Garage with the intention of developing metrics and measurements. However, William Edwards Deming, a renowned statistician and professor, argues that measurement is meaningless until a process is in statistical control. A process achieves statistical control and stability when there is “no indication of a special cause of variation,” where variation may still occur at random, but within known and predictable limits. In general, outliers in a system happen from special and common causes, as special causes are related to special or fleeting events attributable to a person on the job or a defect, while common causes are faults of the system held responsible by management. Based on Deming’s theory, it is only appropriate to introduce metrics and measurements to the businesses our team worked with after processes have

been designed and operationalized for sustainability, and after management has sorted out special causes in the system through leadership, learning, and change management.

The challenge continues after achieving a state of stability as businesses try to figure out *what* to measure. Measurement in business is often too rigid, and especially difficult for small businesses that are constantly changing internal structures and processes. Rather than creating metrics from scratch, we used the approach based on John Dryzek's theory of Living Metrics in his study entitled "Ecological Democracy."¹⁴ While these qualities were specifically addressed to a political mechanism, we found Dryzek's theories highly applicable to developing metrics for startup and SMEs. A living metric must:

- Incorporate negative feedback (generate a corrective movement);
- Coordinate across different problems (sustain a tension between the 3Ds);
- Coordinate across actors (avoid a tragedy of the commons scenario under energy descent);
- Be robust (perform under different conditions);
- Be flexible (captures changing conditions to inform adjustments in internal processes); and
- Be resilient (functions under severely different conditions).

Startups and SMEs at the Green Garage are working to develop Living metrics around stable business processes that exist in the business that incorporate the characteristics listed above.

The Learning Organization

Much of Detroit's past has involved monoculture industries and was once a hub of heavy industry and manufacturing, creating a burgeoning economy that attracted many businesses and people from all over America and the world.¹⁵ However, relying on a monoculture economy and experiencing cycles of economic hardship for decades in the mid-to-late 20th century highlighted a need for a fresh perspective of business, departing from the idea of seeing successful businesses as "well-oiled machines." Businesses involved in this study take on a new business approach, and used ideologies from Peter Senge's Learning Organization.

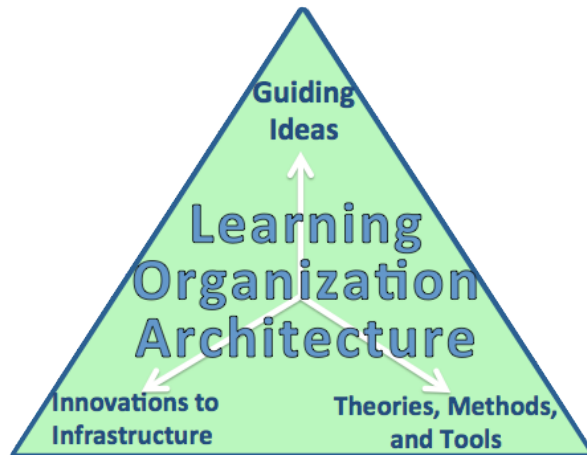
To build a Learning Organization, there are three elements essential to construct its "architecture":

- Guiding Ideas;
- Theories, methods, and tools;
- and Innovations in Infrastructures.

These three elements help to clearly define a business' purpose, mission, and function. It is important, however, to remember that building a Learning Organization is an iterative process. Leaders within organizations not only need to be mindful of the purpose, mission, and function, but also need to be active in maintaining what Peter Senge calls "deep cycle learning." This includes continuous improvement through exploring the organization's attitudes and beliefs, awareness and sensibilities, and skills and capabilities.¹⁶

In this study, the businesses our team worked with identify with these three elements of a Learning Organization. As our team worked with these businesses in collaboration with the business owners and Green Garage, we learned collectively how to integrate and identify TBL characteristics of each business and their unique roles within the local economy through exploring the three elements of the Learning Organization.

Figure 4: Learning Organization architecture, adopted from Senge



Guiding Ideas

The Guiding Ideas of a Learning Organization help a business identify their vision, mission, and values. An essential part to the identity of a Learning Organization, Peter Senge describes guiding ideas as “what the organization stands for and what its members seek to create.”¹⁶ The guiding ideas of a Learning Organization hold three important descriptions that are key to the core identity of the organization: vision, mission, and values. This is especially important for growing TBL businesses because it defines *how* owners will develop their business with a TBL through *what* they believe.

Vision

The vision of a Learning Organization helps businesses visualize their role as part of the “whole.”¹⁶ TBL businesses within Green Garage are advised to view their businesses as a part of a greater ecosystem. Once businesses find their niche, or the businesses’ specialized trade, the individuals within a Learning Organization can have a clearer vision of what their role will be and can uniquely define their business. Having this vision can help a business identify potential partnerships, collaborators, and customers for growth, as well as pinpoint potential competitors within their market.

TBL businesses typically have a vision that includes the future wellbeing through social and environmental consciousness. In looking at the particular business’ “ecosystem,” businesses can identify the role they hope to have in the future. When visualizing the role of a TBL business, entrepreneurs are encouraged to take a deep exploration of what the ideal environment they hope to see their business operate in. To help the businesses we worked with in this study, our team worked with Green Garage during visioning sessions that included physical drawings of the different businesses’ visions. The business owners who have gone through this process to explore the business’ future have expressed satisfaction from the guidance and clarity of the business’ long-term purpose and vision.

Mission

Once the vision of a business has been identified, the next important component of a Learning Organization’s guiding idea is the business’ mission. The mission helps identify *what* the businesses will do in their business “ecosystem,” and outlines the business’ function. The mission is informed by both the vision and values of the organization, providing a guide to how the business will execute the organization’s vision and values.

The business leaders in this study own mission-driven businesses and attempt to grow their respective businesses with a TBL. These TBL businesses must have a very clear mission used to communicate and educate the public about a cause or movement. The business' particular mission and purpose can often be clearly identified and communicated through their internal business culture and practices.

Values

Values within a Learning Organization define the drivers that led the organization's development. Identifying the values of a business answers *what* role this business wants to have, and *what* impact is motivating the business. Communicating the values may seem simple, but is perhaps the biggest challenge when identifying a business' guiding idea. Mission-driven business owners are often very passionate about their work, and can have a tendency to speak in terms unfamiliar to others. The "curse of knowledge," as Chip and Dan Heath define in *Made to Stick*, explains the difficulty some may have in communicating an idea:

Once we know something, we find it hard to imagine what it was like not to know it. Our knowledge has "cursed" us. And it becomes difficult for us to share our knowledge with others because we can't readily re-create our listeners' state of mind.¹⁷

TBL businesses are unique in the function they serve, but all are common by valuing the business' role in social and environmental impacts. While the number of TBL businesses has been growing, there is still a gap in knowledge and understanding that may act as a barrier between those who are familiar with TBL ideologies and those who are still being introduced to them. When communicating a business' values, it is important for TBL business owners to remember to express the values of the organization in a clear and relatable message.

As one of the first exercises of identifying the guiding ideas for businesses involved in this study, business owners were first asked to communicate values of their organization through their mission statement. This exercise allowed the business owner to receive group feedback on the clarity and simplicity of communicating the business' values. Sometimes it was an iterative process; a few businesses were not able to effectively express the values of the business within the first few attempts, but were able to achieve clarity in their message when the vision and mission of the business were clearly identified.

Theories, Methods, and Tools

The theories, methods, and tools of a Learning Organization outline the "fundamental set of propositions about how the world works...[and] a set of systemic procedures and techniques" to "make, prepare, or do with" issues or problems."¹⁶ A continuous cycle to improve upon the theories, methods, and tools used in an organization is key for growth, and is often sought as the "primary engine of growth in science and technology."¹⁶ Theories, methods, and tools can help a TBL business identify ways to solve problems.

Theories

A key theory used by TBL businesses is the theory of sustainability. Often a confusing term, the word "sustainability" was first introduced by the Brundtland Commission report entitled "Our Common Future" defined sustainability through "sustainable development" as "development that meets the needs of the present without compromising the ability of future generations to meet their own

needs.”¹⁸ The theory of providing a sustainable future for future generations also serves as a guide for business’ vision, mission, and values.

Another theory of approaching problem solving through sustainability is the idea of thinking through problems systemically. Systems thinking and system dynamics modeling theory has become a new way of approaching the world’s problems, by studying patterns of issues rather than pointing to one-directional problem solving. This new way of problem solving helps to:

... improve our understanding of the ways in which an organization’s performance is related to its internal structure and operating policies, including those of customers, competitors, and suppliers and then to use the understanding to design high level leverage policies for success.¹⁹

In using system thinking and system dynamics modeling theory, TBL businesses can visualize and foresee potential entry points into the system they want to operate in. This is assuming the TBL business has a social or environmental mission that drives the function of the business. By understanding the causes and consequences of a current system, the leaders within a TBL business can develop a clearer idea of how and why their organization can make a lasting impact and fulfill an unmet need.

Environmental and social sustainability through systems thinking was essential when working with the businesses in this study. During the study process, the team worked alongside Green Garage and the different business owners to examine the different systemic issues current business processes were causing. From these collective learning sessions, the team was able to pinpoint on certain inefficiencies within existing business operations and helped improve processes by integrating sustainable behaviors within the organization.

Methods

TBL methods to approaching business activities can often be confusing and daunting, especially when first implementing sustainability methods into an organization. To be effective, a Natural Change Curve our group developed in collaboration with members of the Green Garage tracks progress of: prioritizing change, building awareness, gaining understanding, integrating trial periods to allow behaviors to develop, and adopting behaviors and processes. Through the curve of learning and integrating sustainability, iteration of these steps in methodology lead to capability maturity of sustainable behaviors and processes.

Most research and existing assessment methodologies focus of the Sustainability Reporting for large corporations and investment institutions with plenty of resources and existing IT infrastructure. However, there very few studies focused on how a startup business or SME should implement ways to collect and track data on these sustainable processes, ways to effectively communicate data on these processes, and, most importantly, approaches towards internal strategic decisions. Currently, very few studies have produced literature on different methods and effective techniques of implementing sustainable behaviors within a business. Our group’s work in developing the Natural Change Curve to help businesses climb levels within the Capability Maturity Model attempts to fill this void of information. We believe our methods and approach can help implement sustainable behaviors in startup businesses and SMEs to grow the maturity of business processes needed to create effective metrics and measurements for TBL reporting.

Tools

A visual tool to the methodologies mentioned above is a Natural Change Curve, tracking progress of different actions taken within the organization driving the theories and methods within a TBL business.

Innovations to Infrastructure

Innovations to infrastructure are a means to break “traditional” cycles of thought and theories. With TBL businesses, a new approach to business operations and processes, information networks, and social networks have all changed the way start-up and SME businesses operate. Innovations to infrastructure “enable people to develop capabilities like systems thinking and collaborative inquiry *within the context of their jobs,*” facilitating creativity and growth among all individuals within the organization.¹⁶

Because TBL businesses hold value in the environment and the community, the processes used in the business operations reflect the value, often leading to creative way to approaching daily business activities. This will often include being resource efficient, involving members of the community, and collaborating with other businesses. These “green” processes can also often disrupt the typical “flow” of a business’ operations, which lead to the need of multiple iterations through feedback from individuals to refine processes. Businesses within this study particularly benefitted from “greening” existing operations, and often were able to ascend in sustainability capability much more rapidly because of the daily repetition and iteration of internal routines and behaviors.

Our Approach: Action-Based Research

In one of the first group conversations with our client, Tom Brennan, he quoted Lilla Watson’s famous saying: “If you have come here to help me, you are wasting our time. But if you have come because your liberation is bound up with mine, then let us work together.” He advised us to unlearn our academics and begin to integrate ourselves in the Green Garage community, attend business meetings, learn about the business’ obstacles, and the business’ daily operations. To meet our goal of learning with and alongside the Green Garage businesses as we collectively designed and implemented TBL businesses processes customized to the needs and values of each individual company, we utilized an action-based research methodology, which became the cornerstone of our project. At its core, action-based research “is the knowledge... [needed] to really understand the social process” requiring researchers to not only “study but also work and participate in the practical and real settings.”²⁰ We strove to integrate ourselves in the Green Garage community to gain the trust of the individual businesses and ultimately serve our clients need’s more effectively.

Using the action-based research approach, our team wanted to further our commitment to immersing ourselves into the Green Garage community, and maintained a regular presence within Green Garage starting in May 2012. This led to Green Garage and its partnering businesses to view our research team as a business-in-residence, and allowed our team to build a rapport and trust with individuals and businesses within the community. During our time at Green Garage, our team participated in various meetings and activities within Green Garage. These included Green Garage’s weekly Friday Community Luncheons, Thursday Sustainable Business Conversations, and daily business incubation sessions with a wide range of businesses. Perhaps most importantly, our team was able to engage in a number of informative and helpful informal conversations that gave our group a special

perspective on the culture of various businesses and how each business played a role in developing the supportive business community within Green Garage.

As the team successfully built relationships and trust within Green Garage through our engagement in meetings and activities, our team naturally began working with businesses for this study: Hilberry Theatre, Fresh Corner Café, and The Social Club Grooming Company. Each of these businesses worked to develop their TBL business through Green Garage's business incubation process. These meetings involved the business owner, occasionally accompanied by an employee; a core team of the Green Garage: Tom Brennan, Bob Weins (a financial analyst), and Kirsten (a waste reduction expert); any other interested individuals within the Green Garage business community; and members our team. As a working group on developing the business' TBL processes, we worked intimately to research various topics of sustainability, perform data analyses, and brainstorm creative solutions. Information from research findings and results from data analyses were shared and collectively synthesized during business incubation sessions and were used to inform the design TBL methodologies and processes within these businesses.

Part III: Case Studies - Our Journey with Our Partner Businesses

a. Green Garage Case Study

b. Hilberry Theatre Case Study

c. Fresh Corner Café Case Study

d. Social Club Grooming Company Case Study

Our team worked closely with our primary client, Green Garage, along with a diverse group of businesses within the Green Garage community to help each business to develop TBL metrics and integrate the TBL framework. Beginning in the summer of 2012, we met weekly for continuous improvement sessions with these individual businesses at Green Garage. Over time, we became integral contributors to these sessions, first being observers and listeners, and then gradually taking on more responsibility over research, analysis, and communication. This strategy helped us build both trust and a personal relationship with each business, allowing us to obtain detailed access to their operations and data as well as have our recommendations and input be taken seriously. In addition to regular meetings at Green Garage, we made frequent visits to the businesses' locations to gain a practical sense of their day-to-day challenges and interact with customers, employees, and business and community partners.

Case Study #1: Green Garage

The beginnings of Green Garage started with Tom and Peggy Brennan leading a group called the Great Lakes Green Initiative to collectively learn about living a sustainable lifestyle. After years of weekly meetings to discuss and learn about sustainability, the Brennans had the idea to share the knowledge they had learned about sustainability, and began to explore possibilities of opening a green demonstration center focused on teaching the public about sustainability. After much discussion with friends, the Brennans decided to build a business incubator, a business that mentors and supports the growth of startup and small businesses, in Midtown Detroit to develop a co-working and collaborative business community.

Before starting construction on the building that would become the Green Garage, the Brennans and their friends spent almost two-years designing the building envelop and interior systems of the building, integrating green building elements which included minimizing waste production and reusing old materials and resources from around the area. During the construction phase, the Brennans also welcomed the help of volunteers from the local community and built strong relationships with individuals of the neighborhood. Collaboration from cross-functioning professions was key from the beginning of the design. The design of Green Garage brought together friends of the Brennans, which included professional engineers, electricians, architects, contractors, and city planners. After two years of extensive collaboration with city planners and architects, the City of Detroit approved the former Model-T showroom within an unprecedented seven business days to be transformed into a green business incubator. Building Green Garage continued the process of broad collaboration. Over the course of two years of construction, well over 200 local volunteers made it possible for Green Garage to open its doors to the public in October 2011. Perhaps one of the most impressive yields and true testaments of the Brennans' commitment to sustainability was generating only two containers of waste throughout the entire construction process.

As visionaries and leaders of sustainability, the Brennans and the founding Green Garage team have been trailblazers in creating a co-working, collaborative learning environment. The Green Garage has helped numerous businesses bring social and environmental consciousness into business activities by providing guidance on change management and greening business processes. The continued commitment of Green Garage's work stems from the four functions of the organization: business incubation, urban sustainability library, sustainability labs, and businesses-in-residence workspace. Each of these four functions has played a significant role in creating community and collective learning.

Business Incubation

The Green Garage's Green Business Incubator function "helps triple-bottom-line (3D) businesses grow naturally... [because they view] businesses [as] living organisms... not machines."⁵ As transformational leaders, Green Garage uses the foundational ideas of business development, but has created innovative processes to help businesses grow purposefully with a TBL. Green Garage's approach is to help entrepreneurs grow their businesses thoughtfully and naturally, rather than utilizing the business incubation process as a means to accelerate a business' growth. Green Garage's core methodology towards growing TBL businesses focuses on innovating business-development through collective learning sessions done in three ways:

1. SEED sessions: helping a business design its core identity;
2. 3D continuous improvement sessions: creating a community learning setting which allows for the business to make iterative adjustments to implement sustainable business decisions; and
3. 1-on-1 sessions with entrepreneurs to develop and evolve their business, relationships, and networks.⁵

Green Garage has a very unique philosophy in facilitating and fostering a collaborative learning environment. First, the layout of the workspaces encourages individuals to come together to work and share ideas. Next, in the collaborative business incubation sessions, ideas are created and made on large sheets of butcher paper and colored markers. While some may argue that the idea of using paper to generate ideas is unsustainable, Green Garage's perspective on creating ideas on paper highlights the importance of idea flow and capture that generate epiphanies for entrepreneurs during incubation sessions. Unlike erasing ideas from whiteboards or chalkboards, Green Garage keeps all ideas recorded on the sheets of butcher paper away and revisits these ideas in the following sessions. This simple, yet effective way to generate ideas has become a way for Green Garage to generate and communicate ideas to businesses that may be unfamiliar with sustainability or the TBL.

Included in the Business Incubator function of Green Garage is the weekly Sustainable Business Conversations for individuals within the Green Garage community and the greater external community. These discussions allow for individuals to join in discussion and collective learning about themes involving sustainability within their business organization. Every week, a discussion topic is used as the focus of vibrant discussions on how to become effective leaders and individuals in our business environments. Topics in the past have ranged from time management, communication, and diversity. The Sustainable Business Conversations are a key example of how Green Garage encourages collective learning by inviting individuals who have developed relationships with members within the Green Garage and creates an environment for individuals of all backgrounds and expertise to share their experiences and ideas for sustainability and business.

Urban Sustainability Library

Inspired by the initial idea of Green Garage being a green demonstration center, the Urban Sustainability Library offers guidance and information on materials about sustainability and continues its commitment to increasing the sustainability "literacy" within the city of Detroit. Matthew Piper, a volunteer for the Urban Sustainability Library, noted the "literacy" of sustainability within the community is important to guide community members to become comfortable with the vocabulary and concepts behind sustainability. Using this guiding principle, the Urban Sustainability Library looks to help "individuals and businesses seek more sustainable ways to live and work by connecting them to resources" that can be used to help them take the next step towards sustainability (Green Garage, 2012). Green Garage realizes the struggles individuals may have with integrating sustainability into their lives outside of Green Garage, but wants to encourage the spread of sustainable habits and lifestyles by being an open source of information and leading by example.

Green Garage's determination to share ideas and resources on living a sustainable life, however, go beyond shelves full of books on sustainability. Green Garage's commitment to open source information is also exemplified through their website (www.greengaragedetroit.com), styled after a Wiki that provides visitors information about the various sustainability projects that are happening within the community which include documentation of business incubation sessions and also tracking and measuring the energy and water systems within the Green Garage building. By making these resources

readily available to any individual or business interested in sustainability, Green Garage extends their commitment to collective learning about sustainability beyond Detroit. Through the use of social media on their Facebook and Twitter accounts, numbers of individuals from outside of Detroit, even outside of the country, have connected with Green Garage to learn more about sustainability and their involvement with the revitalization of Detroit.

Sustainability Labs

The members of the Sustainability Labs consider themselves as the “Geeks” of Green Garage, and are team members that monitor and assess the building’s performance by measuring various systems within the building including water, waste, and energy.⁵ The Sustainability Labs was a crucial group while building the Green Garage as careful consideration was taken when designing and building to the energy systems of the building to maximize the energy efficiency. With lessons learned from building the Green Garage, the next building project, the El Mooreⁱ, will further involve the Sustainability Labs group to ensure the energy and resource efficiency of this building.

Businesses-in-Residence Workspace

The Green Garage offers many services to help build entrepreneurs and their businesses, and also serves as a “coworking community... [of] like-minded social entrepreneurs... [to have] a supportive environment in which to learn and grow as triple-bottom-line businesses together.”⁵ Green Garage currently has 39 businesses-in-residenceⁱⁱ, and houses a supportive community of TBL start-up businesses and SMEs. In this environment, businesses are involved and integrated into the Green Garage community, where entrepreneurs are encouraged to participate and learn with other business owners the growing pains and lessons of developing a TBL business.

Table 1: Green Garage Sustainability Capability

Areas of Improvement	Process Innovation	Level of Adoption	Capability Maturity
Water and Energy Efficiency	Almost completely “off the grid” for water and energy	Adopted	Optimizing
Business Incubation	Co-Created and implemented “natural change curve”	Adopted	Optimizing
Information accessibility	Different ways of providing information on sustainable living and increasing sustainability literacy	Adopted	Well-Defined
Waste	Starting from construction phase– only generated 2 containers of waste-to-landfill.	Adopted	Optimizing

ⁱ The El Moore is the Green Garage team’s next building project, and will be a “green” living space as both a hostel and apartment complex.

ⁱⁱ Number of businesses-in-residence as of April 2013.

Case Study #2: The Hilberry Theatre

Wayne State University's Hilberry Theatre is the country's only graduate student-led repertory theatreⁱⁱⁱ located in Detroit, MI. The student cohort comprised of actors, costume designers, lighting and scenic-technicians, stage and theatre managers work under the direction of a professional staff to perform a repertoire of six classic and modern plays every school year.

Although theatre is not often associated with sustainability, Pegi Amundsen-Marshall, a scenic design professor at Hilberry Theatre, took initiative to integrate sustainability into set design despite a lack of departmental support. Professor Marshall wanted to find ways to integrate her theater curriculum with sustainability, especially in finding ways to reduce waste generated by Hilberry Theatre. The awareness of the importance of having a lighter materials footprint through reducing waste was particularly important to Professor Marshall. The professor's awareness stems from the theatre industry's customary process of triumphantly wrecking set pieces at the end of a show. After each production at the Hilberry Theatre, this process often results in the theatre generating over 30 cubic yard dumpster full of waste.

Professor Marshall learned about the Green Garage while the building was still under construction, and first came in contact with Green Garage by attending a Friday Community Lunch. About a year after her first visit to the Green Garage, Professor Marshall approached Tom Brennan about developing her ideas about sustainability within Hilberry Theatre. Hilberry Theatre began its business incubation process at the Green Garage in July 2012. Green Garage business community members and our team worked collectively with Professor Marshall to reduce waste and bring the vision of sustainable theatre into a reality.

Business Incubation Process with Hilberry Theatre

During the business incubation sessions, our team and Green Garage community members worked with Professor Marshall to identify Hilberry Theatre's goals for their TBL:

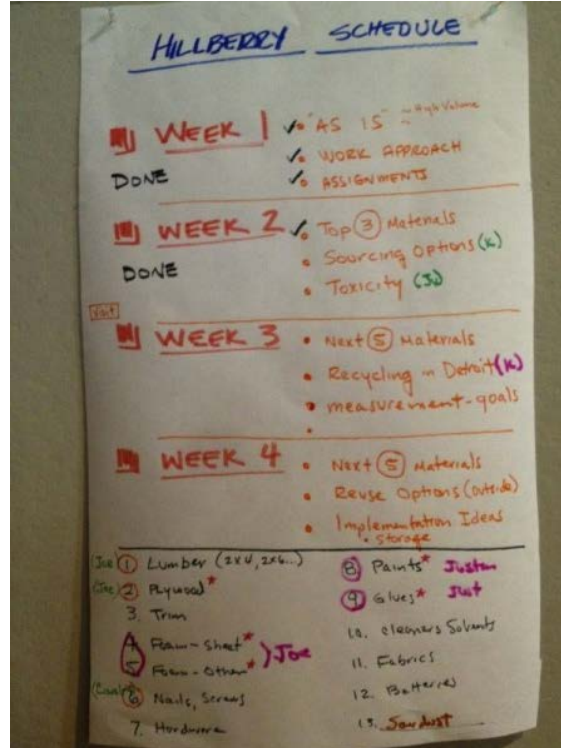
- Reducing waste of materials through the 3R's (reduce, reuse, recycle), as well as reducing toxicity;
- Teaching students and establishing relationships through raising awareness about sustainability efforts on campus and within the community; and
- Supporting the local economy through local procurement of their set materials.

Incubation sessions' with Hilberry Theatre were broken down into four weeks (See Figure 5). The first week's sessions included Professor Marshall informing the working group about the current status of processes at Hilberry Theatre, when the group learned about the theatre's sources of waste. Not only did the extensive use of material produce a lot of waste, but also was a source of fiscal inefficiency and clutter in the studio space. Tom Brennan, the co-founder of Green Garage who was leading the incubation session, asked Professor Marshall to identify a list of common materials used in the studio. From the list of 13 materials, three materials we picked for sustainable management over the next year: lumber, plywood, and fasteners (screws and nails). To fully understand the recyclability of

ⁱⁱⁱ A repertory theatre, or rep theatre, is a theatre company that has a repertoire of plays that are performed and alternated throughout a calendar year. Because the Hilberry Theatre's actors are students, these plays are only performed from September to mid-May (Hilberry Theatre).

these materials, members of the working group were assigned each of the three materials for research. In addition, the other members of the group researched other commonly used materials such as foam, paint, and glue to understand the material’s toxicity and sourcing options.

Figure 5: Hilberry Theatre list of materials sustainability research plan



The second incubation session was centered on collectively learning and sharing the different findings from each group member. Most of these findings included sustainable sourcing options for both acquiring and disposing materials for the Theatre. From these findings, Professor Marshall was able to have a clearer idea of realistic sustainability targets for managing lumber, plywood, and fasteners over the next year. The sustainability targets of Hilberry Theatre, which include local procurement and the 3R’s (reduce, reuse, and recycle), are outlined below. The options and goals outlined in the table below will help Hilberry Theatre achieve positive social and environmental impact by supporting local businesses and by having a lighter environmental footprint through reusing and recycling set materials.

Table 2: Theatre set material sourcing goals and options

Material	% Goal			Sourcing Options
	Re-use	Recycle	New	
Lumber	50%	50%	<50%	Architectural Salvage, Boxxster, ReUse Store, Trans Freight, Mountain Pine Beetle Wood
Plywood	90%	100%	100%	In addition to the above options for lumber: Flint Burn, and Jeff Sturges (owner of MakerSpace in Detroit)
Nails + Screws	50%	-	-	Perry Screw, City Recycling

Integrating sustainability into an organization can often be overwhelming, and while Brennan was led the incubation working group, he was cautious to not inundate the professor and her students with too many tasks that may become unmanageable and eliminated from frustration. To acknowledge potential stress from learning new methods of sustainability, the third week of business incubation scheduled the group to visit the Hilberry studio rather than further discussing more materials. This visit allowed the group to see the physical space of the studio, storage for equipment to be reused, and space for assembly and disassembly for material salvage. The team also provided Professor Marshall with the complete list of contacts for local sourcing and materials recycling.

Figure 6: Hilberry Theatre incubation team on site



In the fourth and final week of business incubation, Professor Marshall brought to the group's attention that the student technical director keeps a fairly complex sheet of materials used for each show. In this list, Hilberry Theatre systematically tracks the type, amount, and price of materials used in each show. Upon receiving this information, the business incubation working group and our team suggested the student technical director add an extra column to begin tracking new and old material used in each set. By tracking this information, Hilberry Theatre could share and educate their audience and donors about sustainability efforts within theatre.

Leadership and Integration of Sustainability in the Curriculum

Professor Marshall did not have full endorsement by the department for her sustainability initiative, which made efforts more difficult to streamline and integrate into the Theatre. Despite the lack of support, Professor Marshall's charisma and transformational inspired her students envision a sustainable theatre through her curriculum. At the beginning of the fall semester in September 2012, Professor Marshall and her students visited Green Garage and introduced her sustainability goals and targets through the 3L's: Less lumber and waste, Low toxicity, and Local procurement. These goals brought excitement to the students who took on leadership roles to promote and monitor progress of

meeting the 3L's. From this meeting, the working group also learned that the student technical director in charge of maintaining list of materials for each show added a column in to track the new and old materials used, and added a column to denote if the material was procured locally.

Outcomes

During this study, our team worked with a number of businesses operating in very unique industries. Our team learned quickly that the theatre industry operates very differently from other business communities, and has a very special and dynamic approach to management. Looking back, it was apparent why Tom Brennan's tactic of slowly introducing sustainability processes into Hilberry Theatre not only allowed the organization to absorb a new idea, but also allowed a year's long time for the Theatre to adapt a new culture of sustainability awareness and learning around that change. By allowing students within Hilberry Theatre to have ownership over the sustainable processes that were being implemented, achievements and milestones through the process of meeting the goals of the 3L's became more meaningful, creative, challenging and rewarding.

A member of our team continued to meet with Professor Marshall throughout the year to follow up and hear about Hilberry Theatre's new achievements. The results were impressive and outstanding:

Less Lumber and Waste

The student technical director in charge of maintaining the records of materials use for each show now has a very robust system of identifying the sources of materials used. This system includes a very detailed list of vendors that are categorized as "second-hand lumber," "free buys," and "local." This student also requires other students to check existing inventory within the studio for materials, then seek options to obtain the material locally before requesting a purchase, and also monitors these purchases for every show. Although the student technical director was already tracking the materials used to build sets for each show, it is the awareness, understanding, and commitment towards sustainability within these students that have created a sustainable process in the studio.

The Hilberry Theatre also worked with Wayne State University Waste Management to relocate the recycling receptacles behind the studio to increase the ease and to encourage recycling. In terms of community collaboration towards sustainability, the relocation of the receptacles was in fact a relief for a neighboring department that wishes to recycle but faced the same inconvenient location problem. Hilberry Theatre is now using fewer recycling receptacles per show because of their reuse and reduction of material use, which has had a significant impact on their financial savings as well. Within the studio, Professor Marshall also encourages recycling as a habit, and locates bins throughout the studio to collect recyclable scrap metal items. The metal collected is then sold to a local steel recycling center, and the money collected is used to treat students with a pizza party as a reward.

Low toxicity

Hilberry Theatre approached the Low toxicity "L" by researching the paints and glues used in set building and design. Although the students are aware and understand the toxicity of paints and glues, Professor Marshall admitted there was little that was incorporated into the theatre to address toxicity. Obstacles in adopting behavior and processes to address toxicity are partially due to students feeling hassled and burdened to mark dates on the paint boxes and to make sure stock is moved off the shelf. Another factor, the professor mentioned, was partially because most low or Volatile Organic Compound (VOCs) free paints do not have the same stage quality as paints with VOCs. As paint products continue to improve, however, the barrier to adopt the use of low toxicity materials may be lowered.

Local Procurement

Professor Marshall leveraged relationships on campus and within the community to help achieve the sustainability targets, and has been involved in conversations within the creative community of how to reuse each other’s pieces and avoid complete destruction of sets. This community shares their successes and challenges with sustainability, and look into new ways to build sets to enable simple dismantling for the reuse of materials. As a result of Professor Marshall’s commitment to sustainability within theatre, theatres outside Detroit hoping to integrate sustainability have contacted the professor. Local vendors aware of Hilberry’s mission have expressed their deep appreciation for the theatre’s support, and a few vendors are now allowing the theatre to rent items instead of buying them. The Theatre’s collaboration with local artists and studios has generated excitement around the sustainability initiative. The presence of Hilberry Theatre within the local community and economy and has also been extremely rewarding as artists within the community have started to borrow art pieces and materials from each other to reduce and reuse existing materials.

The Hilberry Theatre’s TBL culture is slowly forming around waste reduction by reducing the impact of waste streams, becoming more efficient with production budgets through reuse of materials, and educating students and the community. Like other TBL businesses, once Hilberry Theatre was able to stabilize the processes within their organization, tracking process from measures proved to be useful in developing strategies for process optimization. While Hilberry Theatre’s sustainability movement in theatre has reached levels of tracking and measuring for continuous improvement, collective learning within the Theatre proved to be more important. The learning culture within Hilberry Theatre focused on behavioral change among the students and faculty, and provided the foundation to successfully adopt sustainable behaviors. The Hilberry Theatre community has already noticed a positive change in integrating sustainability into the organization, and emphasizes that sustainability is not just measurement. Professor Marshall believes strongly believes that measurement in sustainability “is for nay-sayers who need proof,” and believes that making a difference through sustainability cannot be found in numbers

Table 3: Sustainability Capability for Hilberry Theatre

Areas of Improvement	Process Innovation	Level of Adoption	Capability Maturity
Waste	Set design for safe dismantling	Trial	Performed Informally
	2 nd hand vendors	Adopted	Planned and tracked
	Recycling lumber	Adopted	Planned and tracked
Local Procurement	Local vendors	Adopted	Planned and tracked
	Local artists	Adopted	Performed Informally
Integrating in curriculum	Change agents and tracking	Adopted	Planned and tracked
Low toxicity	Safe paint and glue	Understanding	Not performed

Case Study #3: Fresh Corner Café

Fresh Corner Café (FCC)^{iv} is a mission-driven business that aims to increase access to quality, healthy food throughout Detroit by distributing and selling freshly prepared food, such as wraps and salads, at neighborhood stores, gas stations, and corner grocery stores. FCC's current business model uses revenues from more moderate-income areas of the city to subsidize uncertain sales in other neighborhoods, particularly those in Northwest Detroit. In an effort to guide FCC toward their TBL goals we worked closely with the business to develop a methodology to increase profitability, reduce food waste, and improve store relationships.

Systems Thinking, Integral to Becoming a Learning Organization

As with many businesses, FCC's success relies on a number of factors ranging from order quantities and customer relationships, to inventory and deliveries. To understand the factors that influence FCC's success, our team used a system-wide perspective to address the impacts of orders, inventories, and deliveries on FCC's TBL. Awareness of these system-wide interrelationships, as opposed to linear causes and effects, helped enhance decision making by recognizing processes of change rather than just individual snapshots in time.²¹

Is Detroit really a food desert?

When Noam Kimelman, the co-founder of FCC, embarked on his journey to create a mission-driven organization to improve food access in lower-income areas, he began by first learning about the Detroit's food system, which included food availability and access. Despite media reports declaring Detroit to be a "food desert," or a neighborhood where residents lack access to fresh and affordable food,²² a geographic analysis showed the city has normal food accessibility, but is dominated by smaller grocery stores.^{23,24} Despite having normal access to food, the consistent availability of quality, fresh, healthy food options around the city remains a persistent problem. Compounding the problem of access to quality food are the tens of thousands of households without a private automobile or access to reliable public transportation, making access to healthy food even more difficult.^{25,26} Equipped with knowledge about the complex aspects of Detroit's food system, Kimelman created FCC to deliver fresh food to existing corner stores and community partners.

Learning about past sales performance

When our team first met with FCC, Tom Brennan was helping Kimelman understand FCC food sales performance in consignment stores in Northwest Detroit, a region of Detroit where sales have been typically low and experiences profit loss. Brennan's goal was to improve the two lowest performing stores and repeat this process with two more underperforming locations, following the Natural Change Curve through an iterative learning process. Over the next three months, our team met weekly with Brennan and FCC in deeper learning sessions to become collectively knowledgeable about FCC's ordering and stocking strategies, delivery schedules, sales history, and data collection methodology. These collective learning sessions involved both qualitative discussions and quantitative analysis.

In our analysis to improve FCC's sales and waste reduction, we examined weekly profits by FCC's twice per week delivery cycles and, most importantly, analyzed the number of items stocked and sold at each store. Our analysis showed that FCC was systematically overstocking to maintain a bountiful display of fresh foods. In addition, we found that supply was far exceeding demand leading to many unsold

^{iv} Fresh Corner Café is a business-in-residence in the Green Garage.

items and profit losses. In an effort to offset these losses, FCC discounted older food items. Discounting older food items, however, often meant pricing items less than the cost to produce, yielding a loss even if the item was sold. If the discounted items did not sell, they were either donated to a neighborhood organization or thrown away, creating financial loss, wasted food, and wasted energy. In addition, our collective learning sessions highlighted the following aspects of FCC's business:

- FCC's locations in Northwest Detroit operate on consignment. FCC bears the purchase cost of a food item, but only generates revenue if the item is sold at the retail location.
- FCC's locations in Downtown and Midtown operate mostly on wholesale, where the retail location generally pays FCC for the food items upfront and bears the loss of unsold items.
- FCC determines an order level for each store, but tallies orders from all stores before placing an order for each item from Lunchtime Detroit, FCC's supplier.
- Storeowners generally do not like a low number of items in their coolers.
- Customers highly value freshness and quality of the product.
- Unsold FCC items after the next delivery are sold at discounted prices.

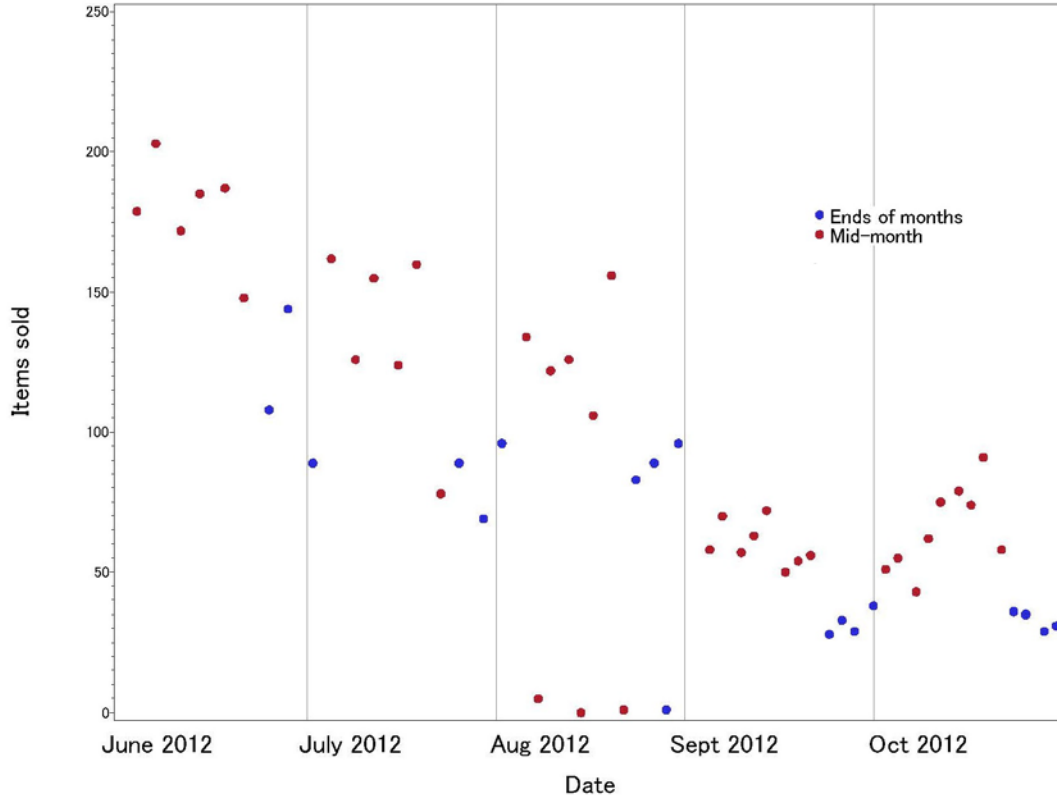
What is the optimal stocking level at each store?

As our team collected more sales data, we learned quantitatively about sales performance through quantity and types of items stocked and sold. For simplicity, we developed a stocking optimization model focused on the financial margins for each item sold^v at the two lowest performing stores. This model applied probability of sales and FCC's discounting policy to determine the stocking level at which FCC would maximize profits and minimize food waste. After using this model for the lowest performing stores, we expanded the use of this model for all stores selling FCC products. The major findings from our optimization model included:

- Increased stock did not lead to increased sales.
- Decreased sales at the end of each month occurred consistently, most likely from depleted Supplemental Nutrition Assistance Program (SNAP) funds of neighborhood residents.
- Sales declined as autumn approached, perhaps due to expenses diverted toward back-to-school purchasing.
- Discounting items did not help business profitability, especially if items were priced at or under production costs.
- Sales at each store were generally unstable day-to-day resulting in low optimal stocking levels of total sales, though total sales for all the consignment stores were relatively stable.
- Optimal stocking levels were zero for some items and stores, suggesting that FCC would consistently lose money at some locations.

^v Our analysis did not include overhead expenses, such as driver wages or fuel costs.

Figure 7: FCC sales in consignment stores from June to October 2012. Sales gradually declined toward autumn, and substantial dips were observed at the ends of months.



Does a bountiful display actually increase sales?

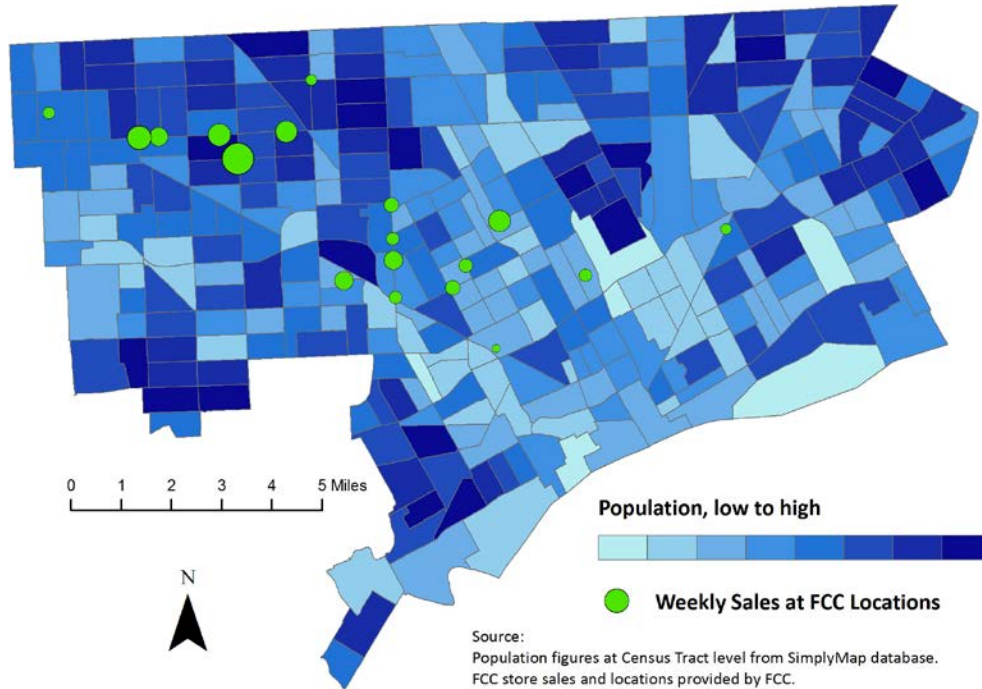
To increase sales, demonstrate commitment to customers, and foster community awareness of healthy food, FCC has a bountiful display of food at each store location. FCC uses these displays as an avenue to meet their social mission and become a household name for healthy food in Detroit. As a cornerstone of FCC’s business model, the bountiful displays have led FCC to fully stock coolers at all stores, even if past and current sales were too low to warrant such high levels of stocking. Our analysis indicated that the bountiful displays had not led to more sales, as sales remained unstable and low. This meant that demand for the food items was not being affected by the displays, resulting in systematic overstocking and consistent losses. Whether the appearance of bounty can increase sales or not remains to be seen. In the short term, the bountiful displays, while envisioned as a solution to develop customer loyalty and drive sales, became its own liability.

Learning about community and demographic factors that affect sales

After establishing a baseline of optimal stocking levels at each location, our next step was to look at underlying community and demographic factors that affect sales. From our collective learning sessions with FCC, we learned that FCC’s locations are highly reliant on very local customers. We embarked on an investigation using Geographic Information Systems (GIS) to spatially relate the sales performance at each FCC location to socioeconomic and demographic factors within a quarter mile radius of each location. We combined FCC sale data with population, average income, number of SNAP-recipient households, average annual food expenditures, and number of local food establishments. In addition, we used a qualitative score FCC created to indicate the quality of each store. We analyzed all of these factors together statistically, and we determined that population within a quarter mile of each

store was the one factor that significantly affected sales. All other factors did not show statistical significance. Understanding the connection between sales and neighborhood population will help FCC determine location expansion and contract decisions. Specifically, our analysis could be used to determine which stores should not be stocked with FCC food items as well as guide FCC’s expansion on the east side of Detroit.

Figure 8: Map of Population and FCC locations across Detroit.



Investigating other factors that could increase demand for healthy food

For future strategies, our team recommended FCC to consider community outreach, customer surveys, and nutrition education programs as ways to increase sales and improve nutrition within Detroit. Nutrition outreach programs can affect the larger system in which FCC operates, and can also tackle the issue of malnutrition and malnourishment within the city of Detroit.

Managing Change in a Dynamic System

In a dynamic system, such as Detroit’s food system, every change has a ripple effect through its many elements. Multiple changes and decisions are interrelated and must be accounted for if change can be effective. These changes often affect intangibles, such as relationships with storeowners. For a business as small as FCC, changes should be introduced and implemented at a pace and scale that can be managed effectively, given its resources. Otherwise, the business will be overwhelmed and will likely lose interest in implementing sustainable change altogether.

In FCC’s case, change was constant. Much of the change that occurred during our team’s involvement with FCC was to stabilize revenues to attract and maintain a customer base. Several changes were seamlessly integrated to existing processes. Others were exogenous changes, putting pressure on FCC’s resources in the hopes of achieving profitability while still pursuing their social mission in the long term. The following summarizes the changes FCC underwent over the past 12 months during our work together.

Changing from twice per week deliveries to three times per week deliveries

Initially, FCC delivered food to each store twice a week (every Monday and Friday) allowing some items to be in the cooler to sit for four days before they were removed at the time of the next delivery. FCC started receiving feedback from customers and storeowners regarding the deteriorated freshness and quality of the food. In the initial stage of its business, FCC realized that it might lose customers permanently if freshness was not a priority, so FCC switched deliveries to three times per week. Under this new structure, FCC stocked items at full prices for usually only two days, or three over the weekend, leading to increased costs with more deliveries and fewer items stocked per delivery.^{vi}

Changing from a delivery truck to personal vehicles

With the added delivery frequency, FCC's expansion into more stores and more areas of the city necessitated the business to consider more efficient delivery systems. To do this, FCC switched from a centralized route with a large delivery truck to multiple decentralized routes driven by hired drivers using personal vehicles, allowing FCC to reach more stores with higher frequency. In addition, this transition created new driver positions and created new jobs. As FCC expands into more neighborhoods, Kimelman plans to employ drivers from those specific neighborhoods to continually strengthen community relationships and create sense of reliability and permanence.

Stocking optimization and improved data collection

Stocking levels were perhaps the most difficult change to consider because our recommendations to reduce stocking levels impacted the core of FCC's business. As a food delivery service, stocking levels were crucial to their vision of a bountiful display and addressing storeowners'

The serendipity of Green Garage's community environment

The community environment of Green Garage was the catalyst for FCC's ability to implement changes to their data collection. After our collective learning sessions, we were able to earn FCC's trust and collaborated with Tom Brennan to work on the optimization model and provide data-driven recommendations for stocking levels. After our regular involvement with FCC came to an end, a statistician working in Green Garage who was unaffiliated with FCC, was introduced to our teams. Inspired by our work, this statistician volunteered his time to develop an automated version of our optimization model, increasing the user-friendliness of the model. This led to FCC converting its data collection from hand and paper to electronic tablets that could effortlessly feed into this program.

concerns of keeping at least a modest inventory. This was the primary reason why our optimal stocking recommendation of one item per store was not implemented. Given the pressures and preferences by storeowners and FCC's brand image, the stocking optimization model was used as a guide to a baseline of expected average sales per store. While store-to-store sales levels fluctuated, the total sales for all consignments stores were relatively predictable. With this knowledge, FCC then could plan on executing their vision accordingly.

Despite not using the stocking recommendation directly, FCC did alter their data collection and analysis techniques to inform their regular stocking. This included collecting more information during deliveries regarding the types and numbers of items sold at discounted prices. FCC also changed the method of data storage from a normalized format to a denormalized format, allowing for easy querying of historical sales trends by date, store, item type, and other factors of interest. The spreadsheet-based stocking optimization model our team developed was then coded by a Green Garage colleague into an automated program that could be seamlessly used by FCC when determining their orders. More recently, FCC equipped its drivers with electronic tablets to collect sales and inventory data at each of

^{vi} Fewer items were stocked per delivery if the same number of items were delivered per week.

their stores, a task previously done entirely by hand. The recent addition of tablets used to record data during deliveries has drastically reduced mistakes in calculations, more rapidly produces invoices for storeowners, and allows for drivers to automatically upload the data into the optimization program, which is then used as a guide for the next delivery's order.

These changes in data collection were managed interactively with the driver preferences and storeowner feedback, as well as with a data-driven foundation. Previously, mistakes in invoicing irritated storeowners, as did low levels of stocking. Now, these concerns are mostly alleviated.

Office Lunch Stands

Determined to maintain a bountiful display at even the poorly performing stores, FCC created other business opportunities to increase revenue and minimize waste. Even though FCC decided to end business partnerships with a handful of stores that performed extremely poorly^{vii}, FCC still wanted to stay in stores that had developed meaningful relationships.

To maintain the relationships of these stores, but still have the opportunity to generate revenue, FCC took all unsold items at the neighborhood stores in the morning and sold these items at lunch stands nearby downtown offices. FCC stands by the quality of their food items for three days, and given the three-day-per-week delivery schedule, the longest timeframe that food would be unsold is three days. This new lunch program had the multi-fold benefit by:

1. Stocking bountifully at the neighborhood stores, thereby keeping FCC on the path toward their social goal towards providing access to healthy and fresh food;
2. Selling unsold items at regular prices, thereby making a profit on unsold items and allowing FCC to stay in business in low-income areas;
3. Providing access to healthy food, and even broadening their customer-base to moderate-income offices in the city; and
4. Reaching different areas and businesses in Detroit.

With FCC already dabbling in a lunchtime office catering business, this new idea dovetails two existing processes in which FCC has experience.

Leadership

FCC's leadership and decision making is primarily through Noam Kimelman. Kimelman has a vision for making FCC a household name for those looking to improve access to healthy food around

Figure 9: An FCC driver invoicing a storeowner via electronic tablet



Figure 10: An FCC employee at their new office lunch stand



^{vii} Based on our recommendations, FCC stopped stocking at certain locations where optimal stocking levels were zero.

Detroit. Our recommendations of stocking level optimization were at the core of Kimelman’s business decisions, and understandably led to hesitance in implementing these recommendations immediately. The optimization model we developed for FCC accounts for many details in FCC’s stocking strategy. However, the model only addresses detail complexity, not dynamic complexity. That is, our team used relatively traditional analysis methods involving statistics and forecasting to account for a host of details. However, this type of model does not account for the dynamic complexity in the system in which FCC operates. Additional pressures complicate implementation, such as maintaining a bountiful display and adjusting to storeowner and customer preferences, and FCC will continue to make stocking decisions based on the interplay among all of these factors.

Given these influences, Kimelman’s decision making is often intuitive rather than data driven and is starting to take into account the pressures that make the food distribution dynamically complex. Improving quality, lowering total costs, and satisfying customers in a sustainable manner is a dynamic problem.²¹ The system dynamics, preferences, and influences are changing faster than data can be captured and analyzed to produce meaningful recommendations about stocking levels. For FCC’s future success, resources must be devoted to move processes towards optimization, but only if these processes within FCC are stabilized first.

Table 4: Fresh Corner Café Sustainability Capability

Areas of Improvement	Process Innovation	Level of Adoption	Capability Maturity
Waste/Profit	Stocking Optimization Model	Adopted	Performed Informally
	Office Lunch Stands	Adopted	Planned and Tracked
	Electronic data collection and invoicing	Trial	
Food access	GIS analysis	Understanding	
Product quality	Increased delivery frequency	Adopted	Planned and Tracked
Customer relations	Bountiful and attractive displays	Adopted	Performed Informally

Case Study #4: The Social Club Grooming Company

The Social Club Grooming Company, a current participant in the Green Garage’s business incubation sessions, aims to become a socially and environmentally responsible barbershop and hair salon located on Wayne State’s Campus in Midtown Detroit. Since starting this small business over a year ago, Sebastian Jackson, the founder of the Social Club, has been embarking on a journey to put his values of sustainability into action while working with the Green Garage and our team.

The “social” in the Social Club has a double meaning. Firstly, the shop is meant to bring people together to socialize in a friendly and diverse environment that encourages connecting and networking with others. Currently, the shop brings together young professionals, professors, students, and even the occasional Detroit celebrity as the Social Club gains a reputation of being a hub for the movers and shakers transforming the future of Detroit.

The second meaning of “social” in the Social Club comes from the business’ aspiration of embodying a socially and environmentally responsible ethic in the way the business operates. Over the past year, Jackson has been working intimately with the Green Garage to improve the Social Club’s sustainability performance. During the business incubation sessions, the business incubation working group has focused on five areas of improvement: waste reduction, water use, energy efficiency, toxicity in products, and the creation of a learning community. The Social Club’s journey towards becoming a TBL business has been a great example of what it takes to put sustainability into action.

For nearly the past year, Sebastian Jackson has been on a journey towards integrating sustainability into the core of his business. Jackson’s vision and mission to create a network of socially and environmentally responsible barbershops and hair salons needed the help of the Green Garage to help turn his aspirations into a reality. Jackson began his journey of learning about and adopting sustainability behaviors with employees of his small barbershop on the campus of Wayne State University.

Figure 11: Sebastian Jackson, the visionary founder of the Social Club Grooming Company

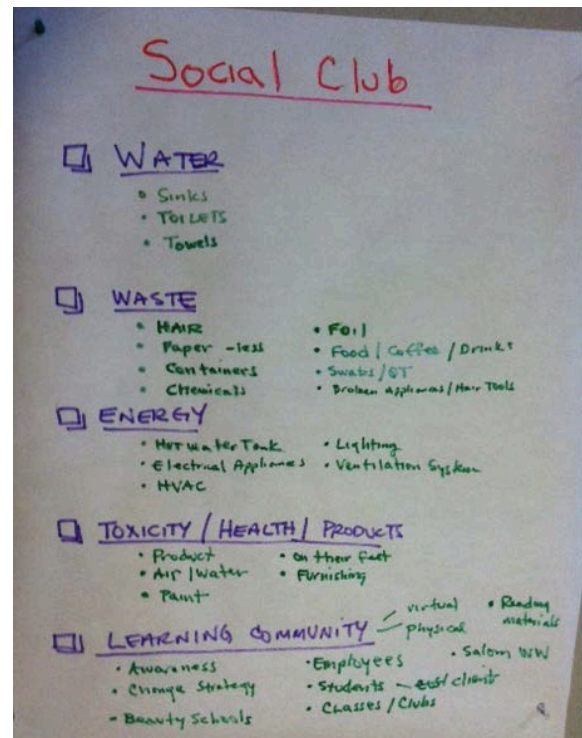


Start Small

From the first incubation session with the Green Garage, the goal was to start with small changes to improve existing processes within a barbershop and hair salon. During this first meeting with the Green Garage, a group of seven to eight people charted out the areas for possible improvement within five broad categories: water, waste, energy, toxicity in Products, and learning community. Below

is a photo of the poster created during the first incubation session between the Social Club and the Green Garage. Since Jackson is the owner of the Social Club, it was up to him to pinpoint the area of improvement that he wanted to investigate first. While Jackson was determined to start with minimizing his shop's waste, Tom Brennan of the Green Garage cautioned Jackson that waste in general was much too broad of a topic improvement to start off with. Brennan then suggested it would be more manageable to start small by assessing one particular aspect of waste. Jackson adapted to the advice of Brennan and decided to focus on the Social Club's hair waste. Over the next two months of incubation sessions, the business incubation working group was dedicated to investigating the possibilities of reducing, reusing, and recycling the shop's hair clippings.

Figure 12: Preliminary list of potential areas of sustainable improvement at Social Club



Collective Learning: What are the possible uses of hair clippings?

The next round of incubation sessions was focused on investigating the possible uses of hair clippings. The working group and our team researched a number of options including using the hair clippings to help clean up oil spills, turning the hair into fabric, composting the hair clippings, and even considered the option of extracting the amino acids in the hair as a body building supplement. After researching these various options further, our realized some options were no longer feasible. The company making oil spill clean-up products out of hair was no longer accepting donated hair and was located too far from Detroit, turning hair into fabric did not seem to be a product in high demand, and the amino acid extraction facilities for body building supplements were located in China. The remaining option, composting hair clippings, made a lot of sense. The working group and our team found if composted properly, hair clippings could not only benefit the environment by reducing the hair from the waste stream, but more importantly benefit the local environment by contributing nutrients to soils in the city.

Is composting Hair Safe? Untreated vs. Treated Hair

Composting untreated hair holds high benefits for composting piles because of hair's natural high concentration of nitrogen, one of the key nutrients for plant growth. However, the working group and our team had to investigate what kind of hair care practices could contaminate the compost with harmful chemicals. After deep investigation of Material Safety Data Sheets (MSDS) for all hair care products carried by the salon, our team found that hair dye products contained the most toxic elements because dyes contain high amounts of highly toxic brominated and fluorinated compounds. Other products such as hair spray and shampoo are primarily made of degradable alcohols or other non-toxic organic compounds that did not appear to be of concern. Based on our findings, the working group could confidently state that hair treated with hair dye could not be used for compost, whereas the untreated hair would be suitable for compost. Since our team's analysis was not laboratory tested, we used a precautionary approach and decided that this pilot run for hair composting would not be utilized for gardens growing food until the team reached a more thorough understanding of the chemical risk.

Designing a new system through existing relationships

The incubation sessions developed two design criteria as the team began to collectively understand the implications for composting human hair:

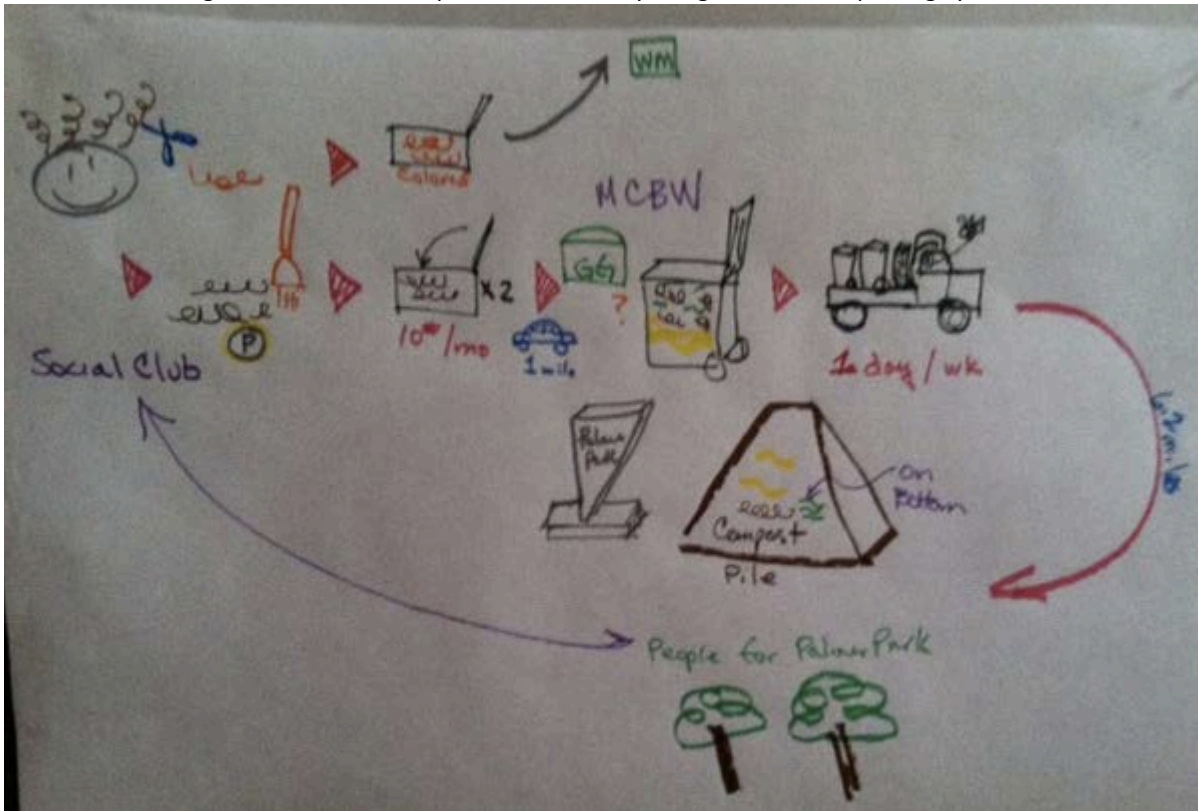
- Only untreated hair could be composted, and
- The composted hair should not enter compost piles utilized for gardening and growing food.

One design constraint was a lack of capital resources for creating an entirely new composting system. Luckily, the existing social relationships of the Green Garage allowed the Social Club to capitalize on an existing partnership between Palmer Park and Motor City Brewing Works for a composting system. Motor City Brewing Works, Green Garage's cross-alley neighbor, is a brewery that delivers its spent grains from the beer brewing process to Palmer Park's compost pile. Palmer Park also composts the manure from the Detroit Police Department's horse stable. The compost is then used to plant saplings in Palmer Park, an area that is also being revitalized as an effort to "green" the city landscape.

Hair composting allowed for the Social Club to build relationships with other organizations within Detroit as well as contributing to a brighter and greener future of the city. The challenge remained, however, to design an internal process for Social Club employees to effectively separate the treated from the untreated hair to avoid contamination in Palmer Park's compost pile. The treated and untreated hair could be separated by first asking customers before their haircut about their hair treatment history. Depending on how the customer responded based on their hair treatment history, Social Club employees would use designated brooms to clean up the hair on the ground after the hair cut.

The incubation team created a visual representation of the newly design process for composting hair illustrated in the graphic below. Although the graphic may look like a simple drawing, the power of a collectively hand drawn poster was very profound and allowed everyone involved in the incubation process to have a clear understanding of the different steps and procedures to composting hair clippings from the Social Club.

Figure 13: Hand drawn poster of the newly designed Hair Composting System



Continuous Improvement of Waste Reduction: Water bottles to Disposable Cups

While going through the adoption of the hair composting process, Jackson began to become aware of other opportunities to reduce the amount of waste being generated by the Social Club. Through trash audits, the most notable source of waste was from plastic water bottles offered to Social Club customers and employees. Because the trashcans and recycling bins were filled with plastic bottles, the incubation team began investigating a solution for the excess amount of water bottles being generated by the Social Club.

The design criteria in this process seemed simple: provide customers access to clean water without wasting plastic bottles. Reusable cups were not an option because Social Club lacked a proper dishwasher with the necessary sanitation capabilities for public use. Instead of using plastic bottles or reusable cups, the working group and our team found that using compostable cups and reusable growler bottles from the previously formed partnership with Motor City Brewing Works allowed for the Social Club to minimize their plastic bottle waste. The internal challenge of adopting the new behavior of using compostable cups, however, still remained within Social Club.

Figure 14: A simple solution to eliminate plastic bottles



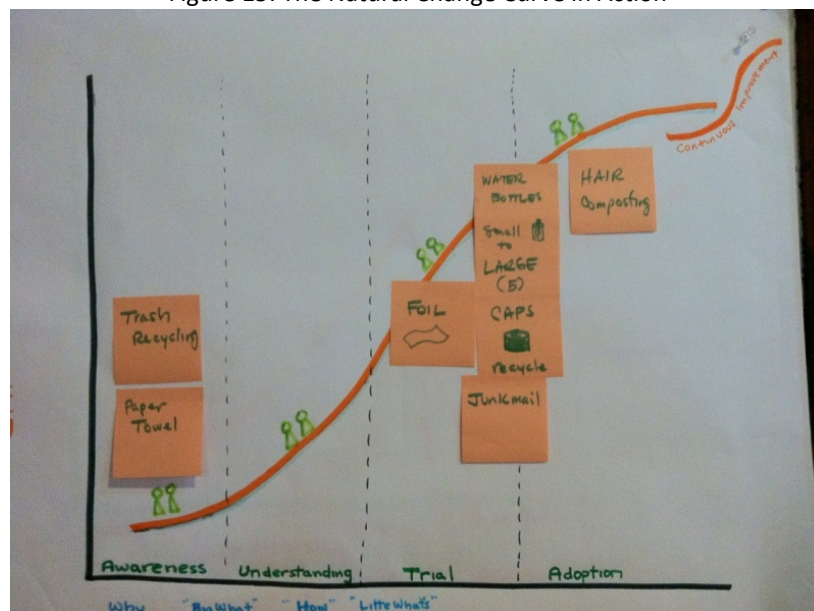
First, our team knew in order to successfully adopt behaviors we had to create a sense of ease in the adoption process. In an attempt to place the water as close to the customers as possible, the incubation team decided it would be best to place the compostable cups, glass growler, and even the small refrigerator previously located in the back room, in the center of the lobby where customers wait before their haircuts. A lack of communication, however, led to confusion and frustration by the employees about the replacement of the small refrigerator originally located in the back room. While convenience and ease of behavior adoption was considered for the customers, the incubation team made a critical communication error by not informing the employees of the changes that were being made at the Social Club.

Too Much Change at Once: The Need for Effective Change Management

The miscommunication from moving the small refrigerator out from the backroom was a profound learning experience for the incubation team and Jackson. Even though the decision seemed to be the right decision from a design perspective, the working group and our team forgot to include the most important stakeholders to understand why and what processes were going to change. Some employees were even worried that their lunches stored in the refrigerator would now be tampered with. Even with little communication given directly to the employees about the changes that were happening within the business, Jackson knew he had to stick with his process adoption and regrettably forced his employees into moving with the business through this change.

After experiencing employee frustration and resistance from other waste reducing changes around recycling and trash, it was quite apparent that Jackson and the incubation team needed a way to better communicate with the employees about upcoming changes in the Social Club's journey towards sustainability. During a pivotal meeting, Jackson was noticeably shaken by the pushback of his employees and was worried about maintaining his success towards greening his businesses operations. Collaboratively, the working group and our team were able to generate a poster that would bring order back into the multiple changes happening at the Social Club and provide a tool to communicate changes well before they are implemented on the shop floor.

Figure 15: The Natural Change Curve in Action



The creation of this poster was of great importance for maintaining momentum during the Social Club’s journey towards sustainability. Most importantly, the poster involved all stakeholders early on in implementing change and allowed for a visual representation of tracking the learning process.

Below is an email sent by Tom Brennan, to the SNRE team highlighting the impact this poster made at the Social Club:

“Wanted you all to know what happened on Thursday at the Social Club. Apparently there were eight to ten people there and Sebastian started talking about making sustainable change happening. Everyone got very excited and then he brought out your diagram showing the Natural Stages of Change and everyone started talking about it...in very loud and enthusiastic tones. They were all very optimistic about it's potential to help sustainable change happen. They now have found a way to make it happen.

This is huge! It is precisely how a sustainable future will come about. This is empowerment at it's best. People empowering themselves. A caring community helps create an environment to make it easier...but they must see, believe and act. Sebastian is more than ready for this.

So delighted that you took the time to be involved last Wednesday. Going over to the Social Club and helping Sebastian put up the change chart made all the difference.

I'm thrilled that I have absolutely no idea on how to measure this outcome. That's because...it's wonderfully beyond measurement. The most important things in life are.”

Figure 16: Customers and employees spontaneously engaging about sustainable change



Tom Brennan pointed out in his message that some of the most important turning points in a future of a business can never be quantified. Learning and empowerment might be the most important determining factors for realizing success at the Social Club, but Jackson knows the power of effective communication, especially communicating the adoption of sustainability oriented behaviors such as composting hair with his customers that come into the shop every day.

Communicating the Environmental Yield of Composting Hair

Hair composting was one of the core process innovations the Social Club created during their first year collaborating with the Green Garage. Although Jackson wanted to share the success with all the customers that entered the shop, he lacked an effective way to communicate why it was so important from an environmental perspective as well as letting his employees know that their new behavior of separating hair was making an impact.

A TBL business gauges its success on the economic, social, and environmental yields it produces, yet there was not a GRI^{viii} metric or measurement that existed to capture the impact or significance of adopting sustainable behaviors such as hair composting. Because of this, the incubation team researched ways to quantify the impact of adopting these sustainable behaviors.

How much hair does it take to feed a tree sapling for a year?

First, the Green Garage incubation working group and our team had to research what existing measurements could be easily communicated to customers and employees. In order to communicate with customers and employees how their support for the Social Club has impacted the environment, our team had to create metrics and measurements to quantify how much hair was needed to feed a tree sapling for a year.

Available Measurements:

- Average oak tree nitrogen uptake rate (mass/meter/year)
- Average human hair nitrogen concentration (nitrogen mg/ total hair mg)
- Number of haircuts (customers/month)
- Weight of hair in container before sent to compost pile (lbs)

Metric Design Algebra:

$$\begin{aligned}
 &\text{Average nitrogen concentration for human hair} \\
 &\quad \times \\
 &\quad \text{grams hair from bin} \\
 &\quad = \\
 &\quad \text{total nitrogen from hair} \\
 &\quad \div \\
 &\quad \text{oak tree nitrogen uptake (g/m/yr)} \\
 &\quad = \\
 &\text{Number of trees grown for one year from 1 bin of hair}
 \end{aligned}$$

According to the incubation team’s calculations, approximately 1lb of hair can feed a sapling for a little under a year. Since the Social Club began composting hair in July 2012, the barbershop and salon has composted over 48lbs of hair. This amount of composted hair equates to enough nitrogen to plant over 40 new saplings in Palmer Park. This amount is generated from about 5lbs of hair per month diverted from the landfill and contributed to better the parks and green space in Detroit.

The true accuracy of this metric may not be perfectly precise, but a metric like this provides a significant learning opportunity within an organization and serves as an inspiration for building awareness.

Figure 17: Keeping track of hair being sent for compost

Number of Bins	DATE Removed
1 Bin = 6 lbs = 5 Saplings	Aug. 2012
2 Bins = 12 lbs = 10 Saplings	Sept. 2012
3 Bins = 18 lbs = 15 Saplings	Oct. 2012
4 Bins = 24 lbs = 20 Saplings	Nov. 2012
5 Bins = 30 lbs = 25 Saplings	12-13-12
6 Bins = 36 lbs = 30 Saplings	Jan. 13
7 Bins = 42 lbs = 35 Saplings	
8 Bins = 48 lbs = 40 Saplings	
9 Bins = 54 lbs = 45 Saplings	

^{viii} GRI, or the Global Reporting Initiative, is a sustainability reporting standard used by many larger companies to report to stakeholders the company’s progress in economic and social sustainability.

Table 5: Social Club Sustainability Capability

Areas of Improvement	Process Innovation	Level of Adoption	Capability Maturity
Waste	Hair Composting	Adopted	Planned & Tracked
	Disposable Water Cups	Adopted	Performed Informally
	Foil Recycling	Adopted	Performed Informally
	Bulk Product Ordering	Adopted	Performed Informally
Energy	Lighting	Awareness	Not Performed
	Heating & Cooling	Understanding	Not Performed

Part IV: Project Outcomes

a. The Natural Change Curve – A Learning Based Approach to Change

b. The Bridging Sustainability Framework – Four Key Ingredients to Growing TBL Businesses

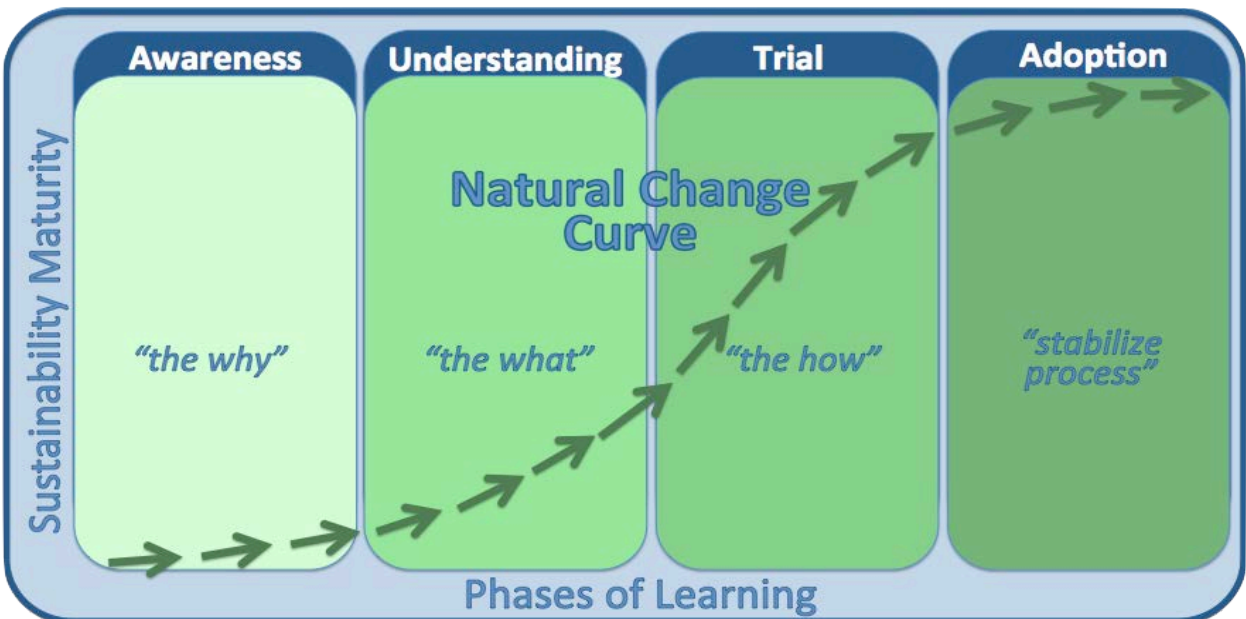
The Natural Change Curve – A Learning Based Approach to Change

The most significant outcome of our project was our development of a learning-based approach to change management, coined the Natural Change Curve. The Natural Change Curve has been successful at continually improving the maturity of sustainability-oriented processes within Green Garage businesses. The efficacy of the Natural Change Curve stems from the ease in tracking the various stages of organization understanding and learning of sustainable behaviors needed for change. During our study, the business that we worked with utilized this curve to visualize their journey towards maturing and improving their sustainability capabilities. In addition, this learning-based approach can transform the culture of a business into a learning organization focused on continuous improvement. The Natural Change Curve's approach to growing sustainability-oriented capabilities within businesses is rooted in the four phases of organization learning:

1. Awareness
2. Understanding
3. Trial, and
4. Adoption

Separating these phases into distinct blocks creates an effective project management tool where multiple process improvements can be tracked.^{ix} It is important to note that even though the distinct blocks illustrate the Natural Change Curve as four equal interval/length processes, in practice these phases may occur simultaneously with fluid boundaries. Ultimately, this model simplifies the learning stages for stakeholders by creating a straightforward strategy for all businesses to engage in improvement processes with minimal sustainability background/expertise.

Figure 18: The Natural Change Curve



Phase 1: Awareness → Explaining the Why & What to Change

^{ix} For example, see Figure 15 in The Social Club case study for a picture of the learning curve with Post-It notes tracking progress.

The first phase of learning is characterized by businesses owners increasing their awareness of current opportunities of sustainability for their business. When business leaders become more aware of sustainability, they view the world around them differently, allowing them to understand the larger systems that influence their collective impact. Most importantly, the awareness phase of learning is achieved by observing business-as-usual processes and listening to employees and customers to generate a constructive dialogue about possible behaviors or processes to improve.

Methods and Techniques of Awareness Phase

- Observe- First, by purely focusing on observing the current business operations, a non-biased picture of the day-to-day impacts can become clear. For example: many of the small companies we worked with at the Green Garage aimed to have a better understanding of their most wasteful practices. In many cases, this was as simple as checking the trash for recyclables, reviewing energy bills, and becoming aware of the culture in which the business operates.
- Listen- Listening to employees, customers, and other stakeholders is another way to become aware of possible future improvement initiatives. This strategy allows the business owner to improve understanding of the needs and challenges of stakeholders, as well as prioritize stakeholder concerns. Understanding the motivations of each stakeholder is pivotal in creating “buy-in” for the upcoming change initiative. Listening can also help develop trust within the stakeholders by creating space for every voice to be heard.
- Generating the Dialogue of Change- After observing and listening to employees, customers, and other stakeholders, it is crucial to create a dialogue focused on identifying and prioritizing possible improvement areas. These conversations allow for honest communication in order to address challenges, foster engagement, and adopt a new behavior.

Goals of Awareness Phase

- Prioritize the “Big What” that Needs Improvement- The awareness phase aims to prioritize and describe the “Big What.” At the Green Garage, we considered the “Big What” to be the general area where a newly learned behavior would make a positive impact. Usually, these improvements focus on easy-to-implement changes, like hair waste reduction in a barbershop or lumber reuse and reduction for a theatre company.
- Explain the “Big Why”- From our experiences working at the Green Garage, clearly articulating the “Big Why” for change was an extremely important factor in increasing stakeholder’s willingness to change their behavior. Simply telling stakeholders to change without providing explanation of the “Big Why” will make it difficult to sustain the new behavior, and possibly prevent the adoption of future new behaviors. Explaining the “big why” from an environmental perspective, however, did not resonate with stakeholders and businesses. To avoid this pitfall, it is important to be able to draw upon a TBL perspective to provide reasons for change. Some stakeholders are more motivated by economic savings or the resulting community benefits. Therefore, it is critical to understand each of the stakeholders’ motivations and craft a message that resonates with their values.

Phase 2: Understanding → Defining “Business-as-Usual”

The second phase of learning is characterized by understanding business-as-usual, and acquiring information on the potential ways to possibly improve. Before the improvement can be designed for adoption, the business owners must first understand the current state of the process that is to be improved upon. Depending on how complex or how unfamiliar the current process is, it may be helpful to: (1) gather learning materials, (2) develop new skills, and build networks to create a community of change within the company. Overall, a clear definition of the “business-as-usual” process and an understandable declaration of the process improvement goals are both necessary to guide the next phase of learning.

Methods and Techniques of Understanding Phase

- Acquire Relevant Learning Materials- Since the Natural Change Curve is a learning approach to change, it is useful to acquire any relevant learning materials to help business owners and stakeholders access the best information possible to support decision-making. This usually includes Internet researching and reading books about the area of improvement.
- Identify Necessary Skills, Resources, & Networks- The resourcefulness of the group may be one of the biggest determinants of success in adopting a new process due to generally small operations budgets. Therefore, it is critical to efficiently use existing human capital resources. Identifying skills, resources, and building relationships within the business community allows for understanding and learning to be more manageable.
- Build Community for Change- Building the community for change occurs both internally with the team invested in improving a current process, and externally as businesses build relationships with individuals and other businesses that with specialized skills, resources, and knowledge within the business’ community to allow the adoption a new behavior.
- Set Improvement Goals- As a team develops and external relationships are aligned with the change initiative, the entire group should collaboratively set goals for the improved process. Goals can range from achieving a 90% percent reduction of waste or a more generalized goal of increasing profitability. By setting a goal, the business owner and team build a shared understanding and direction of the improvement initiative.

Goals of Understanding Phase

- Define “Business-As-Usual” Process- The “Business-As-Usual” process is the way in which the current process is performed, and amount of learning of this process will depend on the complexity of the current process. For example, the Social Club’s investigation of hair waste involved quantifying how much hair was thrown away, compared to Fresh Corner Café, which required an understanding of profitability through the creation of a detailed stocking level optimization model.

Phase 3: Trial → Design & Test

The Trial Phase of learning consists of two distinct sub-stages: (1) improvement-design and (2) improvement-testing. During the design-portion of the Trial phase, businesses identify the smallest change possible to achieve the prioritized improvement, and create a diagram of the improved process. Next, the improvement-testing phase begins by testing the newly designed process at a small enough scale to learn in a low-risk environment, iterate the design, and eventually implement the new behavior across the entire business.

Methods and Techniques of the Trial Design Phase

Think Small - Since small changes in behavior are more sustainable than drastic changes, designing “small” processes maximizes the value of the behavior change at a minimal cost of time and money.

- Conceptualize “To Be”- Conceptualizing the “to be” process involves prioritizing the optimal design solution from the various possibilities for improvement. For example: the Social Club’s business-as-usual process was simply throwing hair away, however after researching alternative improvement solutions, the future process innovation was chosen “to be” composting.
- Gather Feedback and Iterate Conceptual “To be” Design- Once the “to be” design is conceptually selected, the next step involves soliciting feedback from various stakeholders to address challenges. In addition, feedback provides a useful way to ensure all voices are acknowledged and is the key driver for iteration design.
- Secure Necessary Community Partnerships- After potential mutually beneficial community relationships are identified in the understanding phase, securing formal or informal partnerships enables the process improvement to occur. For many Green Garage businesses, individual companies were not able to make the improvements alone and collaborated with partners to source complementary skills, new resources, and business community relationships beneficial to implementing the “to be” change initiative.

Goals of Trail Design Phase

- “To Be” Process Diagram- The final goal of the design-portion of the Trial phase is to create a graphical diagram of the conceptualized “to be” process improvement. This includes visualizing each step associated with the new “to be” process, which ensures understanding across the entire business team. We identified this step as critical to the implementation and found that without clear diagrams, success was reduced.^x Also, collaboratively drawing the diagram during a meeting of stakeholders creates change because of the co-created graphic’s ability to catalyze collective ownership of the improvement.

Methods and Techniques of the Trial Testing Phase

^x Please see the Social Club’s case study for more information about failures during process design.

- Test Small - Having the opportunity to test a new process design on the smallest scale possible minimizes potential obstacles to the change initiative. These small tests are a useful tool for providing feedback on the new process design as well as communicating to the stakeholders that a change will be implemented across the organization. Testing small will most likely occur by modeling a new behavior in a method called “body storming,” an exercise that allows a person pretending they are walking through the steps of the newly designed process to see if they make sense chronologically and to ensure the process makes the right decisions the easiest and most intuitive ones.
- Scaling Up Preparation- After feedback has been generated from stakeholders and any issues in the new process design have been addressed, the business is ready to scale up the change from a small test to a live “test run.” A live “test run” may be a short term test, from a few hours, to a few days to make sure everything runs smoothly before scaling up and implementing the new behavior across the organization.
- Learn From Failure & Iterate Design- Failure is part of the learning process and should not be seen as a negative during the design process. In practice, failures provide valuable learning opportunities to improve design and awareness of obstacles. Learning from failure and iteration of the implementation process are the most important aspects of effective process design.

Goals of Trail Testing Phase

- Improved Behavior Expectations- Once the testing and iterations are complete, clear expectations of future behavior will become apparent. These newly designed behavior expectations should be implemented across the organization.

Phase 4: Adoption → Stabilize, Track, & Continually Improve

Methods and Techniques of the Adoption Phase

- Implement New Behaviors Across Team- The adoption phase begins by encouraging the entire business team to participate in the newly designed behavior/process. Stakeholders that were intimately involved in the design process will have a much easier time adopting the new behavior, while others may have a harder time adopting the new process. In these cases, it is necessary to support and empathize with the non-adopters and provide encouragement to learn and adopt the new behavior.
- Ensure Repeatability & Stabilize Process- While implementing the new behavior across the organization is critical to ensure ease of repeatability, the repeatability ensures the process becomes stable over time. Stability is key in creating a stable process that is easily repeatable any tracking of the improvement results will not provide a realistic picture.
- Define Measures to Track- As the behavior becomes fully adopted and integrated across the organization, business owner should work with their team to identify and define measures to track and improve performance over time. Appropriate measures include those easily captured and relevant to decision making.

- Design Data Capture System- With appropriate measures to track, it is possible to design the new data capture system to track performance of the newly adopted behavior. Data capture, however, may need to undergo a separate Natural Change Curve learning process. A business' existing data capture system is a process of its own that may require to be improved after a new process is implemented.

Goals of Adoption Phase

- Share Results of New Process Adoption with Stakeholders- With the new behavior adopted, stabilized, and tracked, business owners should share the resulting benefits of the newly adopted process with stakeholders and celebrate the successful change initiative amongst the organization and partnering organizations.
- Continuous Improvement- It is important to maintain a philosophy of continuous improvement as a core organization value. This should encourage the entire business team to remain cognizant of future micro-improvements that could be implemented.
- Increase Capability Maturity- According to the full adoption described above, the methods outlined in the Natural Change Curve would allow a TBL business to go from not performing any sustainability process to reaching Level 2 maturity on the Capability Maturity Model (Please refer to Figure 2). A Level 2 maturity is defined as performing according to a designed plan for a new process while tracking the performance of this new process. Achieving Level 2 is a large accomplishment but can be eventually matured even further. Reaching a Level 3 maturity occurs when each and every step of the process is clearly well-defined in a document that can serve as a "recipe" or "owner's manual" for sharing the newly adopted process with new hires or anyone else that is in need of know all the intricate steps of a new process.

Bridging Sustainability: Four Key Ingredients to Growing TBL Businesses

From working with these four businesses, our team found four key components that are necessary to successfully build a triple-bottom-line business and integrate sustainable behaviors. These components include: Transformational Leadership, a Culture of Collective Learning, Process Innovation, and Effective Change Management.

Transformational Leadership

The Harvard Business Review's article entitled *The Five Stages of Small Business Growth*, asserts leadership as the biggest challenge for entrepreneurs to overcome before their business can grow and succeed.²⁷ A large factor in determining an organization's success, leadership is particularly important for bridging sustainability because of a leader's ability to guide an organization towards the organization's vision and goals. During our team's action based research at the Green Garage, leaders such as Tom Brennan, the founder of the Green Garage, and Sebastian Jackson, the owner of the Social Club Grooming Company, have a profound ability to bring people along on the journey towards bridging sustainability. Tom Brennan, for example, has led the Green Garage business community with the idea that "sustainability is always becoming," believing that sustainability is not a destination but rather a continuous journey of organizational change aimed at regenerating social, environmental, and economic yields. In the case of a sustainability entrepreneur, a specific type of leadership has been gaining recognition as the best way to lead a TBL business. Transformational Leadership guides TBL businesses through the journey of adopting sustainability behaviors and processes through organizational change. Recent research is beginning to shed more light onto the importance of transformation leadership in creating a culture of sustainability within an entrepreneurial enterprise.²⁸ Transformational leadership

Professor Pegi Marshall-Amundsen, *Marshaling Sustainable Change at Hilberry Theatre*

Despite the challenges faced by the lack of support from upper management, Professor Marshall used her transformational and charismatic leadership with her students to inspire them to envision a sustainable theatre. She introduced her goals using a simple mnemonic: The 3L's – less lumber, low toxicity, and local procurement. Several students chose an activity based on interest and effectively became change agents amongst their peers. These students created, promoted, and tracked new processes that facilitated the adoption of various sustainable behaviors. The Professor Marshall's mission is now also shared with the larger, external creative community.

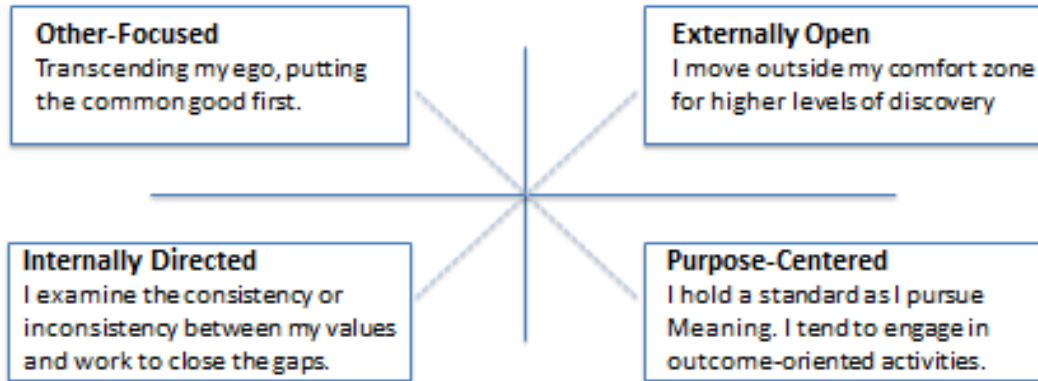
has been positively related to a variety of organizational citizenship behaviors, employee engagement, relationship building, and R&D effectiveness.²⁸

Transformational Leadership scholars such as Robert Quinn of the University of Michigan's Center for Positive Organizational Scholarship argues that Transformational Leadership is more than just a style of leadership or recipe of techniques, and is rather a state of being called the Fundamental State of Leadership.²⁹ According to Quinn, the Fundamental State of Leadership is when a person becomes purpose-centered, internally-directed, others-focused, and

externally open, ultimately allowing leaders to positively transform the people they work with while positively transforming the organization's systems²⁹. When a leader like Tom Brennan or Sebastian Jackson these four fundamentals of leadership, the leader reaches an optimal state of learning and is capable of transforming themselves and the organization they are a part of. The opposite of the Fundamental State of Leadership is the Normal State of Leadership, and differs in a leader's source of internal motivation and the way a person relates to others. Figure 19 and Figure 20 from *Building the*

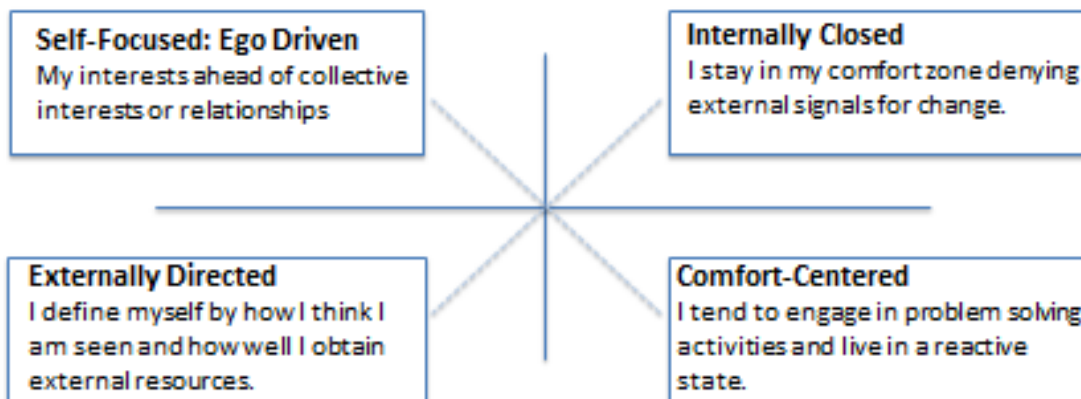
Bridge as You Walk On It: A Guide to For Leading Change compare the differences between the two states of leadership²⁹

Figure 19: The Fundamental State of Leadership²⁹



Counter to being other-focused, externally open, internally directed, and purpose-centered, most people find themselves to be comfort-centered, self-focused, externally directed, and internally closed²⁹. It is often normal for individuals to be reactive and experience difficulty when approached with change. It is also normal for an individual to only act in self-interest, define him or herself on how others perceive them, and remain internally closed to the external signals for change. The culmination of these normal ways of interacting with the world are seen every day in leaders and people becoming complacent with the status quo, always seeking comfort, and acting only out on the individual’s best interest.

Figure 20: The Normal State of Leadership²⁹



While leaders who internally maintain the Fundamental State of Leadership are rare, it is often the leader’s surrounding environment that could help leaders maintain the motivation and drive to keep an internal Fundamental State of Leadership. At Green Garage, business owners all possess qualities and characteristics of Transformational Leadership because the work of these leaders are driven by purpose, focused on benefiting others, open to the feedback of others, and are deeply concentrated with individual’s passion and values. By continually living in the fundamental state of leadership, many of the

individuals involved with the Green Garage are extraordinary champions of change as they propel their businesses forward towards developing a more sustainable Detroit.

A Culture of Collective Learning

Integrating sustainability into an organization is considered a new phenomenon. While adopting sustainable behaviors, individuals often struggle how to successfully integrate sustainability into routine habits. To achieve such an understanding of sustainability, and how to incorporate it into a business culture, science and technology will inevitably confront the complex interaction of nature and society. Since knowledge is inherently partial and embodied, a knowledge-producing scientist may be a captive of his/her own worldview, reducing himself or herself to a “modest witness.”³⁰ Acknowledging the inadequacy of understanding only components of the whole facilitates the collaboration between scholars and practitioners, who together can coproduce truly useful knowledge.³¹ Therefore, in understanding sustainability scholars and practitioners should co-produce knowledge about the business systems and its impacts, and identify practical steps to change it.

In this study, each business during their 3D continuous improvement sessions gathered around a table of a dozen people, some who provided scientific guidance, and some provided the vision and the situated knowledge of their business. They collectively learn and coproduce innovative processes of sustainability in their field of business while applying an interdisciplinary approach. Collective learning allows for a collaborative and supportive learning space to allow individuals to participate and approach new processes. The group’s pooled skills and qualities aid the transformation process through collective technical expertise, social network, and emotional support to help overcome both behavioral and systematic obstacles while implementing new processes. Therefore, we consider a culture of collective learning, one that does not have an endpoint, a key ingredient to improving the sustainability performance of the businesses.

A culture of collective learning in an organization also helps capture the true capability baseline of each individual within the group or unit of an organization, and provides a level platform for understanding the organization’s mission and vision of sustainability. As a group, they work through learning towards a united vision, building a sustainable future. Moreover, the group dynamic would influence the learning and behavior of the individual and hold the individual accountable to the transformation.

Collective Learning, the Catalyst for Smart Change at Fresh Corner Cafe

When we first met with Noam Kimelman, founder of Fresh Corner Café (FCC), we discovered that FCC was systematically overstocking in store locations across Northwest Detroit and experienced major financial losses. From our team’s analysis of FCC’s sales data, we developed a model that gave an optimal stocking level for each item at each store. For some stores, our model advised to stock as little as one item, and for others the model advised to stop distributing to there altogether.

While Kimelman learned from our analysis that FCC was overstocking, our team also learned that one of FCC’s core beliefs was to stock bountifully at these stores. In Kimelman’s view, a bountiful stock was critical to customers, who may not have other healthy food options and possibly rely on FCC’s food as a source for healthy food. This deep collective learning process led FCC to start an Office Lunch Stand program. This program allowed FCC to stock bountifully at consignment stores, but can still make a profit from unsold items after the very next delivery at Office Lunch Stands. Through a collaborative process of considering quantitative and qualitative factors, FCC was able to create a way to sustain its social mission without sacrificing profit.

Process Innovation

The day-to-day processes and operations are key leverage points for introducing sustainability into a business. Finding innovative ways to conduct business operations helps to integrate sustainable behavior into the members of the business and also creates a pathway for a small business, limited on resources and time, to implement its TBL methodologies.

Process innovation used to target high-impact areas for improvement is an important step towards integrating sustainability within an organization. While simple measures, such as energy use recorded on utility bills, can be used as a guide to determine areas of improvement, impacts areas do not always need to hold a numerical value. Measurement of sustainability performance for small businesses is also often expensive and subsequently not meaningful enough for the business to have a stake in the success in the process. Instead, high-impact areas could be determined qualitatively through employee and customer feedback or business owner preference, based on day-to-day difficulties or what the business envisions for itself.

Initially, innovative processes should aim to address small and easy-to-manage processes within an organization. The importance of having an organization start their process innovation with small processes is to develop the business's experience and comfort in process innovation. Having small wins in process innovation early on in the sustainable behavior adoption process can generate momentum and rhythm for a business to implement more small changes, which can ultimately lead to big impacts within a business. Furthermore, sustainability endeavors are a journey of failures. Implementing innovative processes will inherently happen in fits and starts. Starting small and failing small allow for organizations to learn through iterations of process improvement. This learning cycle will help develop the capability of the small business to implement more innovative processes continuously over the long term and can eventually foster and develop the organization's culture of sustainability.

Process Innovation -Composting Untreated Hair by Social Club

The journey taken by the Social Club to create a system to compost hair waste is a prime example of process innovation. Previously, the Social Club's internal process for managing hair waste was to just throw it in the trash that would be taken to the landfill. By first prioritizing that hair waste was an issue to investigate, the continuous improvement incubation sessions at the Green Garage enabled the team to explore multiple re-use options for hair waste before deciding on a conceptual solution to compost the hair.

Although the conceptual solution was decided upon to compost the hair waste, the team still needed to design the steps, procedures, and overall system that would require creating the newly adopted process. Every step along the way was deliberately designed, from the way the treated and untreated hair would be separated in the shop, to the delivery of the hair to the compost pile. And only when each step of the process was designed could the Social Club begin testing to see if the process was indeed repeatable and integrated within the daily routines of the employees. After successfully adopting the hair composting process in the summer of 2012, the Social Club has composted nearly 50 pounds of hair in 10 months, making them very proud to let their customers know that each haircut will go on to feed newly planted sapling trees at Palmer Park which helps make Detroit a greener place to live.

Change Management

Employees can sometimes view change as “disruptive and intrusive,” often “upset[ting] the balance” of an organization³². Effective change management plays a crucial role in implementing

sustainable behaviors within an organization, especially when the possibility of resistance within an organization threatens the success of adopting a sustainable process or behavior.

A complex concept such as sustainability requires attentive and effective change management. Russell L. Ackoff, an organizational theorist, explains in his work “The Art and Science of Mess Management” that leaders of the change must balance between the hard objectives and a soft approach to prevent resistance and a lack of compliance.³³ To prevent chaos while an organization is undergoing change, management should assign resources, develop structures, devise a reward system, and internally communicate the successes stories of change. This is particularly important to findings in our study because adopting sustainable behaviors not only takes time, but also requires collective collaboration within the organization. Management within TBL businesses must address potential resistance to change from employees in order to successfully implement sustainability into the organization and communicate the importance of these changes towards sustainability.

Managing change is integral for transformation, but is rarely addressed in literature. A literature review by Bourne, et al explains why initiatives for change fail or succeed from a change management lens.³² Results from that paper show that three levels of the change management theory must be addressed simultaneously in order to achieve change successfully, the three levels are:

1. **The individual perspective school:** From a behavioral approach, all behavior is learned but only behavior that is rewarded is sustained. From a Gestalt-Field psychologists approach, behavior is a product of the individual’s interpretation of external stimuli. In adopting sustainable behavior, employees should have a deeper understanding of themselves and the situation in question first before reaching a change in behavior.
2. **The group dynamics school:** An individual’s behavior is dependent on of the group environment. When the focus of change is directed at influencing the group norms, roles and values, the interplay of forces and group pressures influence the individual’s behavior. Adopting sustainable behaviors within an organization can quickly be encouraged or discouraged based on a group’s reaction to the behavior individuals within the organization.
3. **The open systems school:** Organizations are part of a greater system, and change is often effectively implemented by understanding the intricacies and understanding of subsystems in which the organization operates. TBL businesses operating in their industry can effectively implement change through recognizing inefficiencies within the existing systems and subsystems.

The change management method was one of the most concrete documentation in our project of how to operationalize change towards sustainability in a small business. The gradual implementation of new green processes with awareness, understanding, trial and then finally a first level of adoption allows the organization to reach the first level of maturity capability to learn and continue to adopt sustainable behaviors and processes.

If leaders institute learning in their leadership to form obligations, principles, and methods that define the role of sustainability in their organization, leaders within an organization can achieve effective change management. A culture of performance evaluation for the employees, statistician William E. Deming argues, nourishes fear and drives employees to meet a quota. In a TBL business, however, the leader learns from and alongside employees about incorporating sustainability in their service and workspace, allowing employees to become agents of change themselves³⁴. The leadership

in the TBL businesses we worked with found methods to manage the change by testing small processes, failing small, and making small adjustments in the process. This continuous improvement learning cycle is based on Deming's Plan, Do, Act, and Check (PDCA) Cycle explained earlier in our Understanding, Theories, and Research section.

Effective Change Management and Nurturing by Green Garage

At Green Garage, the community that develops during business incubation processes draw out different perspectives on how to implement change into an organization. Rather than directing businesses on how to change, Green Garage encourages during these business incubation sessions to collectively learn how to best implement sustainable behaviors to change the culture of the business. Through this method of business engagement, business leaders who learn through the business incubation process can successfully implement effective change management within their organization. During these sessions, Green Garage encourages businesses to adopt small changes in sustainable behavior, often emphasizing the idea that small changes lead to big impacts.

Part V. Reflections

a. Challenges of Growing TBL Businesses

b. Implications of Our Study

c. Conclusions & Key Insights

d. Limitations of Our Study

e. Suggestions for Further Research

Challenges in Growing TBL Businesses

Although the startup businesses and SMEs within our study were able to successfully implement processes for TBL business development, most business leaders who attempt to redirect their business with a TBL experience a number of challenges. Most notably, barriers to measurement and a willingness to change are often the biggest factors that prohibit full adoption of sustainable processes and behaviors.

Barriers to Measurement

Barriers to measurement are often caused by overwhelmed business owners not knowing how to start or measure the success of their sustainability initiatives, leading to failures in implementing sustainable processes. In fact, the rate of failure of the implementation of such measures is as high as 70% of attempts³². The businesses in this study have also faced these challenges, and these challenges are often rooted in the startup business or SME's limitation of resources. Additionally, the lack of societal familiarity of sustainable processes adds an extra barrier to implement a TBL performance measurement system in small businesses.

Time and resources

A performance measurement system requires data collection, analysis and reporting, and small businesses often lack the overhead, capital, and material resources to be efficient with data collection. A number of metrics require extensive data collection and analyses for each measure. In this study, our team realized that the physical time and energy needed by an individual for data inputs are resources that small businesses do not have. Small business owners often do not have the proper IT support, leaving large potential for data collection and analysis unmanageable.

At FCC, One Measurement is Not as Simple as it Seems

In identifying a performance measure for FCC, we focused on developing an optimization model to predict the optimal stocking level of their four food items in several corner stores in Detroit. For only one measure applied to only 13 of their stores, some four different data points must be gathered for each of the four products every week, reaching over 800 entries in one month. This is all to be done by the four people who work to do the strategy, finances, investments, orders and deliveries, quality control, and research on new ventures. It was apparent to us that a performance measurement system is a huge burden on the small business and an unrealistic request unless it is at the core of the business and is built into existing processes.

Qualitative results

Businesses within this study strongly value their community. Much of the societal measures are qualitative in nature, but quantifying these measure is challenging. It was apparent from the beginning of working with our partnering businesses that quantitative performance metrics often do not hold value or affect the business owner's decision making. Rather, qualitative results were weighed more importantly and strongly determined how a business owner would proceed. Our team found more success in developing living metrics through integrating sustainable practices to existing business procedures and operations. By creating living metrics rather than developing completely new metrics and measurements for a business, our team helped the TBL businesses in our study discover new opportunities in revenue and markets, environmental sustainability, and community development.

Understanding Sustainability

Familiarity with concepts in sustainability and the opportunities for business is still in its infancy. In this project, our team helped businesses bridge various sustainable ideas and behaviors with traditional business operations. The business owners involved in this study were able to develop a deeper understanding of how to bridge sustainability to their business, and now work to expand the commitment of sustainability to their employees and customers. These mission-driven entrepreneurs believe in sustainability and have a desire to do build their businesses with the community and their local environment through growing the organization's sustainable process capability maturity.

Willingness to Change

In the 1960s, Arthur D Little, an international consulting firm, provided an equation for organizational change^{35,11}:

$$K \times D \times V > C$$

The variables of this equation are defined as:

- K represents Knowledge of first practical steps
- D represents Dissatisfaction with the status quo
- V represents the desirability of the Vision of the future
- C represents the Cost, both material and psychological, of doing something

Obstacles to adopting change within an organization are often from the lack of simplicity in the first steps geared towards change. Disagreement between employees and management about the assessment of the status quo can also lead to resistance in adopting change.

Fortunately, the businesses we worked with already had the willingness to change through implementing sustainable behaviors. However, their circumstances were not alike. At Fresh Corner Café (FCC), change was needed to minimize the losses associated with uncertain sales from low performing stores. These losses could have potentially put FCC out of business in low-income neighborhoods, and put the business in a financially and socially unsustainable state. While our quantitative analysis was detailed and informative, our recommendations for low stocking levels at stores were after first not well received by Noam Kimelman, FCC's Co-Founder. Kimelman had a vision for bountiful displays and storeowners to satisfy, but this vision conflicted with their knowledge revenue losses from overstocking. Despite this knowledge, however, Kimelman and FCC developed new business strategies that will avoid the cost of waste, but sustain the vision. After becoming more aware of the consequences of overstocking, Kimelman and FCC employees cultivated relationships with local offices to sell FCC's fresh, but unsold, items at lunch stands. This strategy enabled Kimelman and FCC to incorporate a sustainable change without disrupting the company vision.

At Hilberry Theater, change was championed by the set design professor, who had a vision for a sustainable theatre, despite a lack of institutional support from Wayne State University. Reusing lumber was a change that not only affected the financial bottom line, but also made a more efficient use of Hilberry Theatre's studio space. The synergy between reducing material use and cost savings combined with Professor Marshall's vision, allowed for Green Garage and our team to help bring sustainable behaviors and processes into Hilberry Theatre and bring Professor Marshall's vision of a sustainable theatre into a reality.

Unlike FCC, the change that Sebastian Jackson and the Social Club was not core to the operations or service of the Social Club. Through the business incubation sessions with Green Garage

and our team, the Social Club gained knowledge of how to reduce their waste stream by composting hair. In this cycle of learning, the Social Club also built community relationships by partnering with local businesses to ease the transition from traditional waste disposal to composting. By implementing composting as a process in the business, Jackson and the Social Club saved money once it composted hair because the business was able to reduce the fees paid Wayne State for waste refuse.

Implications of our Study

Through our work with the Green Garage, The Social Club, Fresh Corner Café, and Hilberry Theatre, our team found that in order to grow a TBL business, businesses should aim to slowly adopt sustainable behaviors by following the phases of learning outlined in the Natural Change. The successful adoption of behaviors is primarily guided by the strength of the business' transformational leadership, culture of collective learning, process innovation, and effective change management. Business leaders must keep in mind that multiple iterations of learning through the natural change curve are essential to continuously improve the organization's capability maturity.

Although our study was initially expected to find results in TBL reporting methodologies for startup and SMEs, the sustainability capability of the businesses our team worked with was not developed. Our team regularly engaged with business owners to identify business processes that were stable enough to improve, which then allowed the group to develop sustainable processes and design Living Metrics to grow and mature existing processes. Through multiple iterations of the Natural Change Curve, business processes can reach higher levels of capability maturity, and eventually ascend to the stage of full optimization through continuous improvement.

Conclusions & Key Insights

Growing TBL businesses is challenging, but can be achieved most effectively when transformational leadership, a culture of collective learning, process innovation, and effective change management are used effectively in an organization. After working intimately with the Green Garage, our team found that small business owners are most effective in building a TBL business when focusing on the adoption of sustainable processes and improve upon the process' sustainability capability maturity. In order to adopt and allow for these new processes to mature, our action-based research suggest that creating a culture of collective learning can lead to continuous improvement of sustainability capabilities and serve the foundation for growing a TBL business.

This study suggests that the concept of sustainability reporting for startups businesses and SMEs should be redeveloped to emphasize the adoption and maturity level of behaviors rather than focusing solely on quantitative metrics or managerial approaches. For resource-limited startups businesses and SMEs, having sustainable processes implemented into an organization must come before these businesses invest time and resources to track data. Based on our experiences, business owners who hope to grow TBL businesses should focus on creatively re-designing and innovating current processes to become more sustainable rather than tracking and collecting data.

Limitations of Our Study

Although our study may not provide an exact solution to solving the challenge of implementing sustainability within organizations, our work does provide a meaningful dialogue about the ability of

learning, transformational leadership, innovation, and change management to grow a TBL business. One of the biggest limitations and challenges of this study were the lack of a common language to adequately describe the intersection of sustainability, innovation, and entrepreneurship.

Particular limitations can be seen in the Natural Change Curve, especially since it is difficult to create a methodology that fully grasps the complexity of change. This curve was organically created at the Green Garage and serves as a conceptual foundation for gaining new perspectives on improving TBL businesses processes through learning. The Key Ingredients outlined in the study were apparent to our team through working with businesses-in-residence at the Green Garage. Because of the Green Garage's unique business community, our findings may be inaccurate to broader conclusions about bridging sustainability in large organizations or institutions. In summary, this study does not provide a definitive solution to growing TBL businesses, but will serve as a guide that can help the continual growth of small businesses.

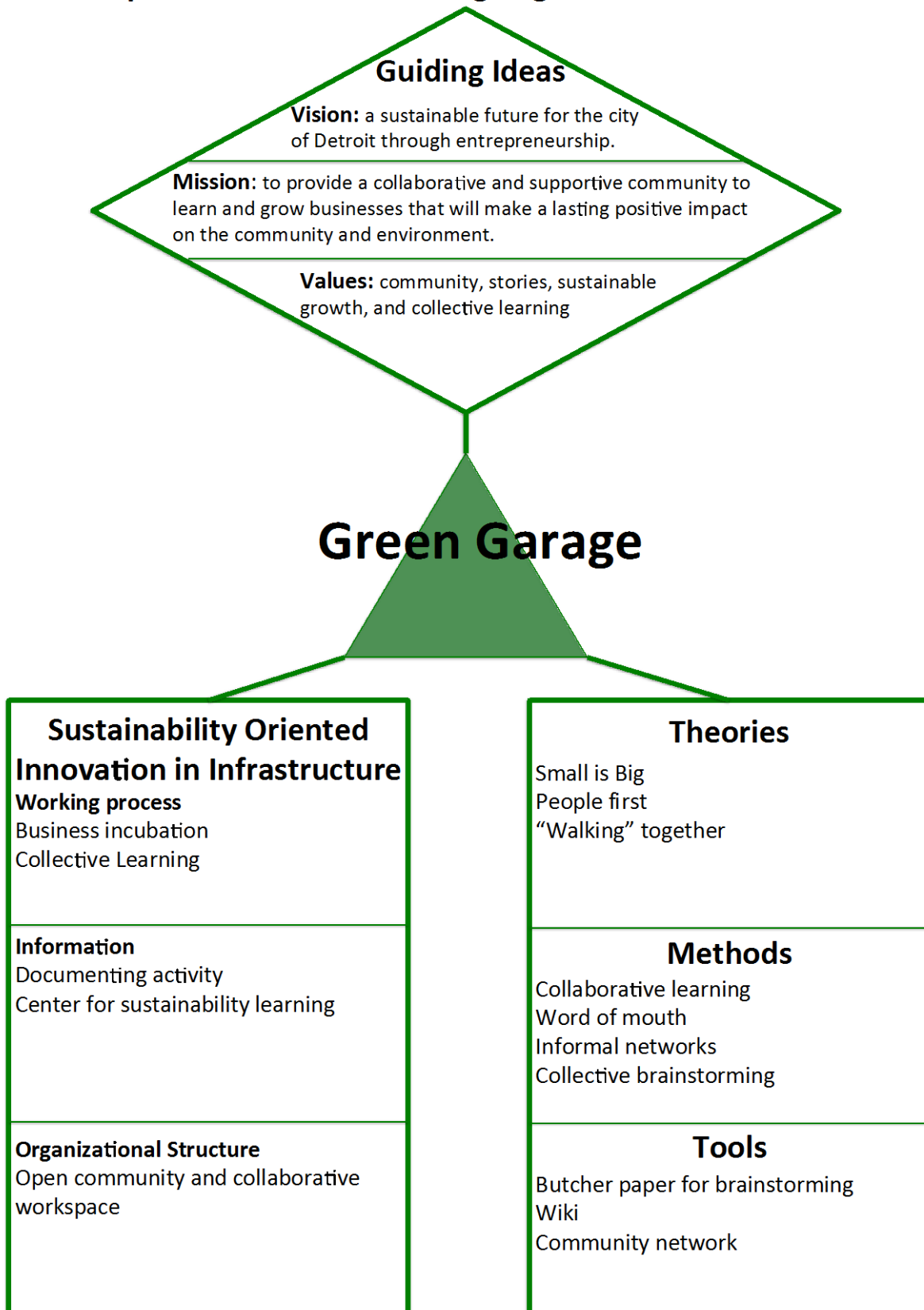
Further Research

Further academic research should continue the investigation of the implementation and learning of sustainable behaviors through the lens of capability maturity, as well as investigating the various change management techniques utilized in implementing sustainable processes into an organization.

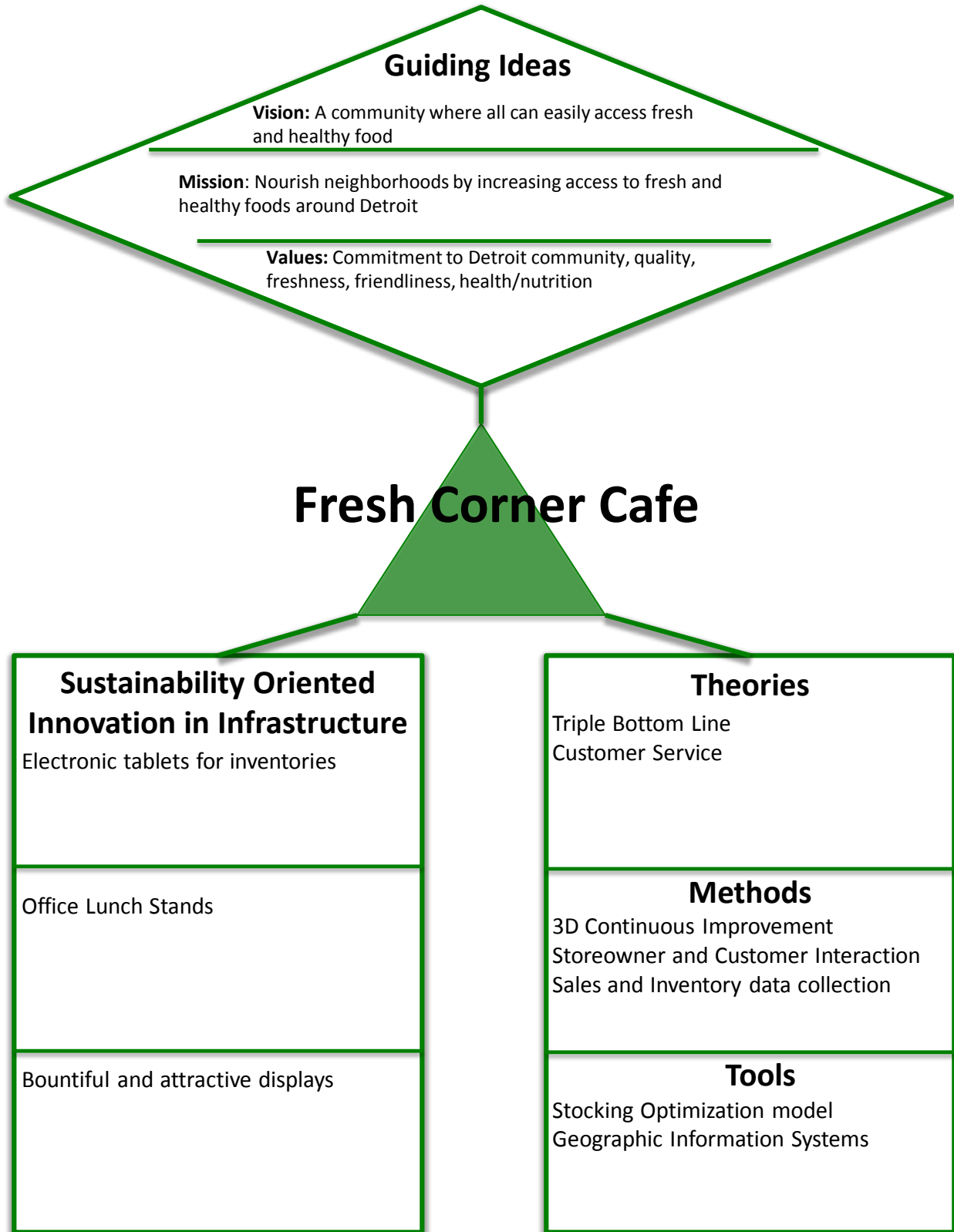
Other future research opportunities exist at the Green Garage, especially in documenting another aspect of their services. Green Garage's SEED sessions, is a process that allows an entrepreneur to develop their idea with a systems thinking design approach and creates new business models that defines the nature of the business and the value-added to the business ecosystem. These systems thinking business model creation sessions leverages relationships in the business ecosystem to more effectively produce economic, social, and environmental yields.

Appendix I: Learning Organization Architectures

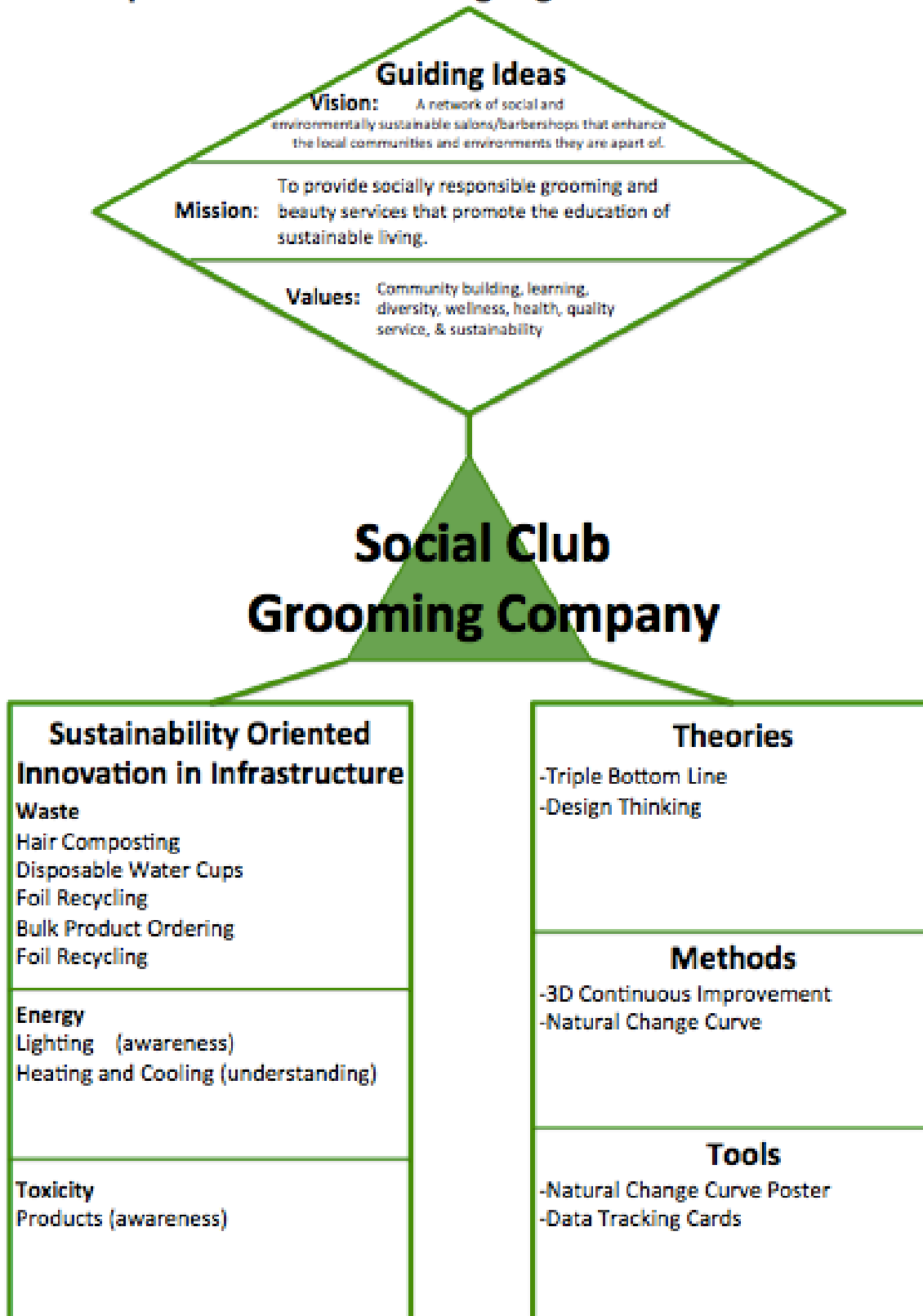
Triple-Bottom-Line Learning Organization Architecture



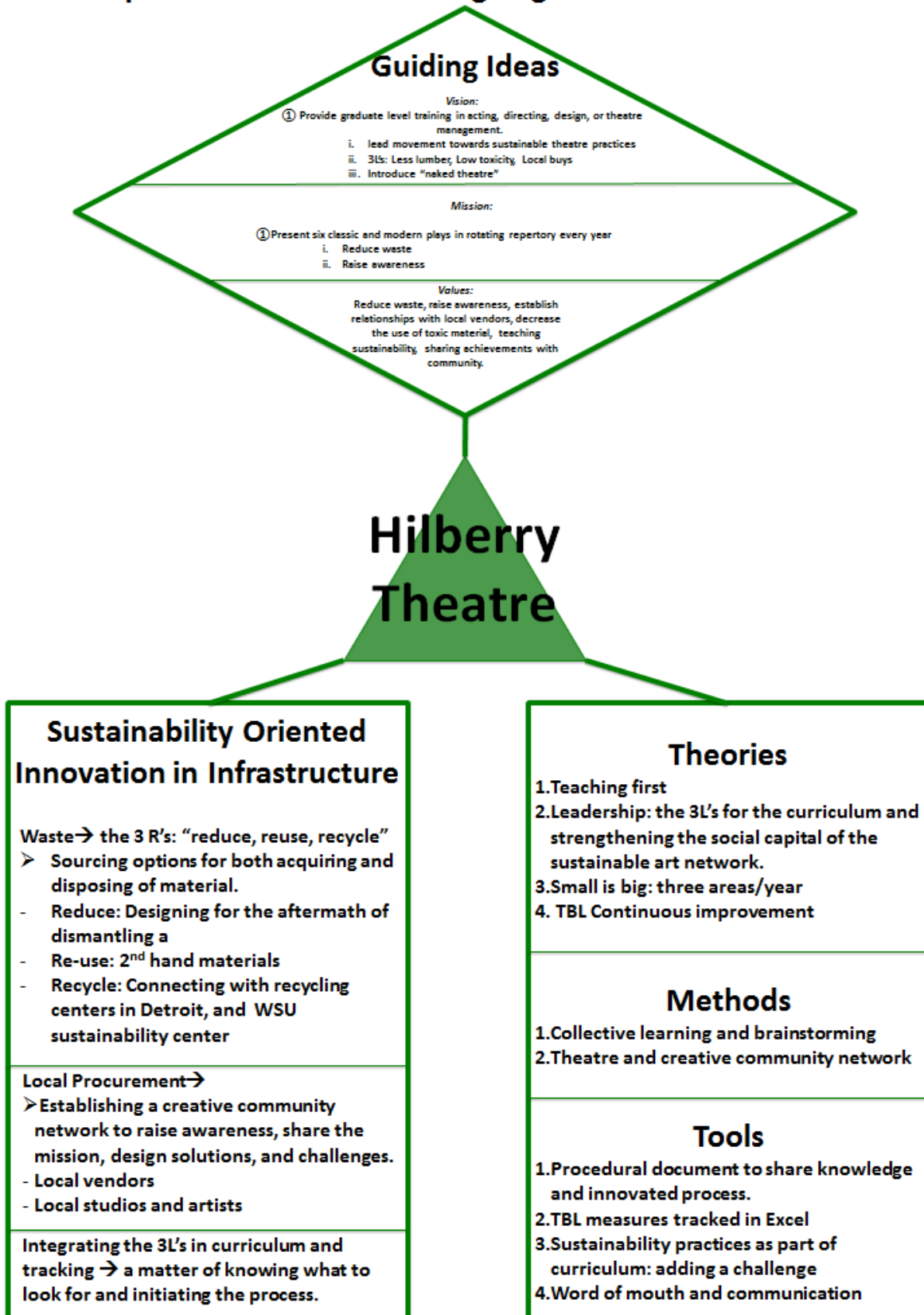
Triple-Bottom-Line Learning Organization Architecture



Triple-Bottom-Line Learning Organization Architecture



Triple-Bottom-Line Learning Organization Architecture



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