Sustainable Systems Thinking in Communication Design Education

Yvette M. Perullo
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By Yvette M. Perullo

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For the degree of Master of Fine Arts

Is approved by the final examining committee:
David L. Sigman  
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Cheryl Zhenyu Qian
Shannon McMullen

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Approved by Major Professor(s): David L. Sigman

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Head of the Graduate Program  Date
SUSTAINABLE SYSTEMS THINKING IN COMMUNICATION DESIGN EDUCATION

A Thesis

Submitted to the Faculty

of

Purdue University

by

Yvette M. Perullo

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Fine Arts

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West Lafayette, Indiana
This thesis is dedicated to my husband, Joe. I give my deepest expression of love and appreciation for your support and the sacrifices you made during this graduate program. Thank you for encouraging me to pursue my dreams and for your understanding over these two and a half years.
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A NOTE ON COMMUNICATION DESIGN NOMENCLATURE

There has been a shift in terminology referring to graphic design or graphic art as “visual communication design” or “communication design.” The word “graphic” refers primarily to pictures and images and is typically associated with printed outcomes. The terms “graphic design” or “graphic arts” no longer accurately encompasses the design thinking strategies, concepts, digital media, or other interdisciplinary solutions developed by designers.

National and international design organizations have embraced a shift in the profession. Icograda, a global member-based network for professional communication design, works to actively promote “the value of design practice, thinking, education, research and policy” (Icograda n.d.). In 2006, the association exchanged “graphic design” for “communication design” in its official language. The statement reads:

[I]t became apparent that there was consensus amongst the board that the term ‘graphic design’ did not reflect either the current state of the profession or how our members described themselves...

As designers, our members work in increasingly rich media and collaborative environments. In addition, the senior members of the profession are working increasingly in consulting capacities with less focus on ‘traditional’ design production. In many ways, it reflects the shift from thinking about design as an artifact – producing a thing – and embraces the reality of design as a process – a means of creating communications solutions.
There was unanimous support as the outcome of this policy session and subsequent follow up in a virtual environment to shift from ‘graphic design’ to ‘communication design’ (Busse 2007).

Originally named the American Institute of Graphic Arts, or AIGA, the organization suffered an identity crisis in 2005. With the desire to reflect the shift in the profession’s growth without having to re-name the oldest and largest organization for design, the group dropped “The American Institute of Graphic Arts” from the title, but retained “AIGA” as the official name. The tagline “the professional association for design” was also added. AIGA’s change in title reflects the change in the design field. The term “graphic design” implies a focus on purely aesthetic styling. Organizations are acknowledging the difference between graphic design and broad scope communication design. The statement from the AIGA website explains:

The organization has begun using the existing acronym along with a new tagline that better describes AIGA, its members, and their interests instead of using the full name of the organization. ‘AIGA, the professional association for design’ was chosen for its ability to help the organization create a greater understanding of our members’ potential role, the value of their role and importance of their contributions. Retaining the brand equity of the abbreviation ‘AIGA’ has been a priority, as it preserves a rich legacy of graphic design. By shifting the language away from ‘graphic arts’ and towards ‘design,’ AIGA can achieve greater recognition for design’s role in culture, civic society and business (Twigg 2005).

While aesthetic choice and skills remain integral to the practice, communication design also includes research, concept development, and positioning solutions to communication problems. However, communication design can involve more sensory experiences beyond “visual” solutions. Design outcomes may include sound, touch, or even smell, which are particularly important considerations when designing for accessibility. Therefore, the term “communication design” rather than “visual
communication design” is more accurate to describe the field. I will use the terms “communication design” and “design” when referring to graphic design or visual communication design throughout this thesis.
ABSTRACT

Perullo, Yvette M. M.F.A. Purdue University, December 2013. Sustainable Systems Thinking in Communication Design Education. Major Professor: David L. Sigman.

Design ingenuity and sustainability can, and should, work together. Designers have an ethical responsibility to provide ideas that do no harm, and better yet, create positive solutions that nourish the environment, social and cultural structures, and the economy. This approach, referred to as sustainable systems thinking—in contrast to more common design approaches—looks at a problem as an integrated component of an entire network. Sustainable systems thinking helps designers, clients, and consumers to consider who or what is connected to the design outcome, where the project will have positive and negative ecological, financial, cultural or social impacts, and make the entire supply chain visible. This process requires a more holistic and deeply collaborative method that still emphasizes creativity and innovation like traditional design processes. This also calls for a redefined craft that explores new materials and processes to confront issues of sustainability and to better understand the interconnectedness of all parts of a system.

While some individual designers are taking the lead, unfortunately, sustainable systems thinking is rarely taught in communication design education. To become a
guiding principle rather than an exception, the process of thinking in sustainable systems must be integrated into the fundamental curriculum in communication design education. This argument is the basis of my research agenda. The results of a survey I conducted indicate that sustainable systems thinking education is rarely taught in undergraduate design courses. This survey also shows the desire from students to learn about this topic in communication design programs. Through personal interviews, design educators shared their perspective on integrating sustainable systems thinking in curricula. Incorporating systems thinking into the core undergraduate education will allow students to begin thinking, at a visceral level, about problems as components of larger systems and connected concerns. As a result, it is my goal that the designers of tomorrow will have the power and knowledge to design responsibly for more social equality, cultural preservation, environmental viability and economic stability.
CHAPTER 1. INTRODUCTION

...by creating whole new species of permanent garbage to clutter up the landscape, and by choosing materials and processes that pollute the air we breathe, designers have become a dangerous breed. And the skills needed in these activities are taught carefully to young people (Papanek 1985, ix).

Communication designers develop printed materials, design artifacts, impact people and culture, and shape environments. All of these forms—and the billions of dollars spent on advertising and marketing annually—result in an unsustainable cycle of production and consumption. This cycle has far-reaching effects that are connected and cumulative. Similarly, economics, sociology, culture, and ecology (commonly called the Quadruple Bottom Line) are all part of a connected system that relies on a delicate balance to thrive (Walker 2011; Sood and Tulchin).¹ The point is, one cannot address a single area in a system without affecting many other areas. Sustainable systems thinking means considering a specific problem not in isolation, but within the context of

¹ Traditionally the term “Triple Bottom Line” refers to the pursuit of growth that is in balance with ecological, social, and economic needs (or people, planet, and profit) and is typically associated with a business model. This concept can be expanded beyond business as a relevant way to break down sustainability into meaningful parts. Because of the ambiguity with the “people” component, there has been an argument for a fourth component such as spirituality, culture, purpose, or personal meaning, from which necessitated the term “Quadruple Bottom Line.” As a proponent of this change, I advocate for “people” to be become more specifically “society” and “culture.” This distinction helps us to consider our global community while also placing emphasis on being more respectful of cultures, beliefs, and personal meaning, designing with, not just for, the people.
a larger whole. A very uncommon practice but far too important to be ignored, sustainable systems thinking in design starts with questioning how communication design solutions affect the Quadruple Bottom Line.

Economic imbalance, such as financial inequality that triggered the Occupy Movement, allows the rich to become even wealthier while others remain below the poverty line. Continuous environmental degradation allows our natural resources, which provide and support life, to diminish while cultural and social values—respect for self and community—are disintegrating. Designers have the power to choose whether or not to create communication messages that target vulnerable people, request materials sourced from endangered forests or mined from mountain top removal, or design solutions that harm human health and the health of the planet.

As a professional designer I, too, was responsible for creating mountains of junk mail and the consumption of vast amounts of resources without regard for the impacts. As only one of thousands of designers working the same way, I realized there is an urgent need for a change in the communication design profession. In 2005, I began the Master of Arts in Graphic Design program at the New England School of Art & Design at Suffolk University (NESAD) in Boston, Massachusetts. My research at NESAD focused on environmental sustainability in communication design.

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2 The protest movement, Occupy Wall Street (OWS), began on September 17, 2011 in Zuccotti Park, located in New York City’s Wall Street financial district. Protesters aimed to raise awareness and trigger change regarding social and economic inequality, greed, and corruption. The OWS slogan, “We are the 99%,” refers to income disparity and wealth distribution between the wealthiest 1% and the rest of the U.S. population.
My research led me to the conclusion that for communication designers, information on sustainability was inconsistent, limited, and scattered. Time constraints and inadequate resources limited practicing designers from easily attaining the knowledge needed to make responsible decisions. As a practicing professional designer, I understood the need for immediacy and fast turn-around time. The short deadlines most designers are familiar with do not allow ample time for investigation into topics that require substantial research. Most websites available on sustainable communication design at the time of my research contained partial or superficial information. These websites did not offer interactive tools and the content on any of the available sites was outdated. Alternatively, printed resources on green communication design would quickly become obsolete and the medium of print itself could have a large environmental footprint, contradictory to the document’s intended lessons.

The greatest impact a designer can have on minimizing waste and any damaging impacts occurs during the concept phase at the beginning of the design process. Communication designers cannot make a substantial difference by creating ways to clean up the waste they create. This reactive approach to design only serves as a small bandage on a gushing wound. For example, mass-producing an awareness poster about the negative effects of littering would merely create more litter and most likely would have little effect on changing behavior, particularly in the United States where the
Given the harmful environmental effects of communication design, my research goal was to compare the traditional design processes against greener ones. This investigation would lead to developing a solution to minimize the negative consequences of communication design outcomes.

My solution involved creating one comprehensive online resource called *Rethink Design* that encourages sustainable communication design practice. The website included information and resources on designing with a smaller environmental impact. The goal of the site was to become a thorough but quick resource on sustainable communication design without the need for the designer to invest, or possibly waste, valuable work time, which would encourage sustainable behavior. I designed and, with the help of web application software developer Bryan Weber, produced a series of interactive tools and searchable databases that help designers find environmentally friendly paper and search for greener commercial printers. Additionally, *Rethink Design* included an interactive *Project Sizer* tool that would help to efficiently size print projects to minimize paper waste.

Upon the completion of my degree from NESAD, I was introduced to Professor Eric Benson from the University of Illinois at Urbana-Champaign. His thesis research ran

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3 Posters are typically designed for pedestrian traffic, but Americans walk significantly less than any other industrialized country—about half as many steps per day. The United States is a car country and many cities and towns have not been engineered for walking (Vanderbilt 2012).

4 During the printing process, multiple print pieces are placed on one larger sheet of paper, called the parent or press sheet, and then trimmed down to the proper size after printing is complete. Efficient sizing is a method of streamlining the size of printed projects to maximize the press sheet area. Proper sizing reduces amount of paper used and minimizes trim waste from the process.
along parallel lines to my own and we discovered that we had similar goals: to provide a single, reliable, and unbiased sustainability resource for communication designers. We made a decision to combine efforts and merge our research projects to provide quality resources and better tools from a wider range of designer inputs. Retaining the name of Benson’s website, Re-nourish, we re-launched the site in the summer of 2009 with more robust tools, user accounts, articles, case studies, and other resources. The website scope expanded to encompass sustainability in a more holistic manner including social, cultural, and financial considerations along with the original environmental concerns. In order to aim for true sustainability, a balance must be struck with all connected and affected systems of life. It was our goal to provide designers with tools to work towards this balance.

Re-nourish has been successful since its re-launch. The site has won many awards and received recognition in various design circles. Because of this recognition and feedback, I feel that I have been influencing positive change in the profession. However, I believe that many of the Re-nourish audience members consist of the already convinced—those who are looking to expand their knowledge or contribute to the community of sustainable designers. Some of the Re-nourish audience members are practicing professionals who have worked to modify their existing way of designing to incorporate sustainability considerations into their work. This shift, however, will always be a conscious modification to their learned design thinking processes rather than a natural approach. This, I believe, is because sustainable systems thinking was never taught as part of the design process during their education.
The practice of sustainable systems thinking in design may be uncommon simply because it is a more recent concept. It is my observation that designers who apply sustainable practices tend to do so later in their careers, perhaps after they gain more life experience, are more socially conscious, economically savvy or mature, and thus are beginning to think about how their actions affect the world around them. In order for designers to have a positive impact from the results of their work (not just a “less bad” result), a comprehensive shift in the design process must begin earlier. Sustainable systems thinking must become a part of a designer’s fundamental design thinking process in the education stage. To apply this concept to communication design education requires a shift in pedagogy.

After teaching design courses and looking into similar design programs I noticed that sustainability is rarely mentioned in the communication design curriculum. As expected in traditional curricula, emphasis is placed on creating visually striking and meaningful pieces, but sustainable design does not seem to fit in. Usually reserved for an occasional "green" design project, sustainability remains a special and separate concept. Most often, these green projects focus on using reclaimed and reduced materials, without whole systems thinking taken into consideration. Interior design and architecture programs are paving the path to sustainable design and systems thinking, integrating LEED certifications⁵ and environmental, social, and economic sustainability

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⁵ Leadership in Energy and Environmental Design (LEED) is a set of rating systems for the design, construction, operation, and maintenance of buildings, homes and neighborhoods. LEED standards measure environmental responsibility and resource-efficiency (U.S. Green Building Council n.d.).
at its core. For example, many interior design education programs are accredited by the Council for Interior Design Accreditation (CIDA) (CIDA n.d.). While CIDA does not specifically require LEED training, the accreditation requires programs to have principles of sustainability in the curriculum. Compared to other design disciplines, communication design programs are not measuring up.

I want to help create a paradigm shift in communication design education and thinking that would incorporate a new approach into the design thinking process. I am interested in reshaping the way designers are taught to think about sustainability in traditional communication design education. A modification in education would help communication designers conceptualize solutions to design problems holistically, considering all implications of their decisions on people, the environment, and the economy. This would help in the creation of effective communication vehicles that achieve positive and nourishing conclusions. For a fundamental shift to happen, sustainability must be given as much importance as other design considerations in the classroom. Matters of sustainability should share the same level of attention as typography, composition, color, and concept development. While Re-nourish provides practical tools and resources for practicing designers, a need for more holistic approach to design education is necessary. Education is the catalyst for understanding. There is great value in modeling curricula to provide the essential foundation for teaching sustainable design.

The design process customarily taught in colleges and universities involves students solving a communication problem in isolation with predetermined parameters.
Students then move into their careers practicing a similar linear approach. Historically, this has resulted in the creation of short-lived ephemera that require an abundance of natural resources to produce which, in turn, becomes unwanted toxic waste and pollution. A better approach would task students to look at the entire project as a network of connected ecological, social, cultural, and financial concerns. Such a holistic perspective of sustainable systems thinking in design also encourages designing solutions that mimic nature’s cycle.\(^6\) This technique would help designers, clients, and consumers to consider who or what is connected to the design outcome, where the project will have positive and negative impacts, and make the entire supply chain and all possible impacts visible. Exploration of new materials and processes to confront issues of economic growth, social welfare, cultural integrity, pollution, and climate change help to better understand the interconnectedness of all parts of an effected system.

Systems thinking in design requires a collaborative method that, like traditional design processes, emphasizes creativity, communication, and innovation. Collaboration combines people with different backgrounds and specializations to work together to solve design problems. Rastello’s retrospective explains Papanek’s insistence that collaboration is vital to the design process:

The concept of working with a group is crucial... Victor Papanek defined the minimum design team, comprising: “the designer, the ecology, medicine, the

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\(^6\) Nature’s cycle refers to the growth, dependence, and ultimate decay as nutrients for more growth in a continuous and healthy lifecycle. In nature’s cycle nothing goes to waste during its life or death where all parts of nature serve as nutrients for other growth. Authors Braungart and McDonough coined this term, and ultimately named their book, Cradle to Cradle as it refers to mimicking nature’s cycle in product design (McDonough and Braungart 2002).
social and behavioural sciences, mathematics, anthropology, psychology, engineering, the creation of scenarios, biomimicry, media and a member of the 'client' group in question”. He added: “The people for whom the design team are working should be part of this design team…” (Rastello 2008, 101)

A collaborative team structure is effective because people from specialized fields and invested interests will present a variety of unique perspectives that a singular person working alone could not accomplish. Collaboration with specialists, businesses, organizations and stakeholders, such as members of the community in which a design is intended, is vital to the longevity of the design solution. This practice ensures that the “end-user” is involved in the design process, and the solution is created “with” not just “for” the intended audience. When the community is involved in the process of a project, they are more likely to feel invested in the results and will be more willing to put effort into its success (The Center for the Study of Social Policy).

Implementing sustainable systems thinking in undergraduate communication design programs is necessary in order to create positive change and achieve balance in the Quadruple Bottom Line. Communication design students should learn how to apply design thinking and strategies—all of which are currently taught in traditional design education—to solve real world problems and enhance quality of life. Design graduates could be putting their skills to use for the greater good and create solutions beyond the prescribed production-consumption model that has been engrained by traditional design educations. The inclusion of sustainability pedagogy in undergraduate communication design programs is the basis of my research.
The term sustainability has evolved through usage so that it now has a narrow “environmental” connotation, but the true definition goes beyond just “being green.” Sustainability is a complex topic in which the concept is systemic and interconnected with everything we do, make, and consume. More than two decades ago, the UN General Assembly united countries to pursue sustainable development together by establishing the Brundtland Commission. Defining sustainability was part of a larger response to considerable deterioration of the human environment and natural resources. In October 1987, the Commission published a report titled “Our Common Future” which focused on sustainable development and how to achieve it.

The Brundtland Commission defined sustainability as allowing for the needs of all people to be met without preventing those same needs from being met for future generations (World Commission on Environment and Development 1987).

The definition of sustainable development as written in the 1987 report is well known and often cited: "Sustainable development is development that meets the needs

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7 Named after Gro Harlem Brundtland, the Chairman of the Commission and former Prime Minister of Norway, she was chosen for her strong background in the sciences and public health.
of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs” (World Commission on Environment and Development 1987).

When this definition of sustainability was adopted, it was conceived from a human-centered vantage point and sets a fairly low standard for responsible behavior. Therefore, the Brundtland Commission definition of sustainability could be misinterpreted to mean that natural resources can be liberally degraded so long as the next generations have enough left to survive. Although this is not the intended interpretation, it is clear that the definition of sustainability must be expanded.

Industrialism and consumerism that affect plant and animal ecologies are directly connected with human well-being. Additionally, “needs,” as referred to in the Brundtland definition, not only include the natural environment, but also involve healthy economies and societal equality, ethics, spiritual values, traditions, and culture. Therefore, the concept of sustainability must include the ability to regenerate and thrive, not merely just the ability to sustain. True sustainability is achieved by finding a balance in the Quadruple Bottom Line, which incorporates economic viability, social
responsibility, cultural preservation, and environmental stewardship, thereby improving quality of all life overall.

2.1 Sustainability applied to Systems Thinking

Systems thinking is a holistic approach to problem solving that is mindful of how a system's parts interrelate and explores the way systems work within the context of a larger whole. This contrasts with traditional problem solving, which breaks down issues into individual and isolated elements and potentially leads to unintended consequences if the effects from one element have repercussions that negatively impact an adjoining part.

In systems thinking methodology, positive effects result from an exchange of strengthening and balancing processes. A strengthening process could lead to the increase of a single component, which must be checked by a balancing process. If unchecked, the system will eventually become unstable and collapse. This exchange of strengthening and balancing helps to maintain equilibrium in a particular connected system (Rouse 2005). For example, a homeowner is looking to build an addition on her house. With no room to expand horizontally she would like to add a second floor. Without checking the integrity of the foundation before construction, the weight of the

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8 Systems thinking originated in 1956 by Jay Wright Forrester, the founder of System Dynamics, which deals with the simulation of interactions between objects in dynamic systems. Forrester's insights were largely triggered by his involvement at General Electric during the 1950s when employment at the GE appliance plants in Kentucky displayed a short three-year cycle. From hand simulations, or calculations, of the structure and corporate decision-making, Forrester proved that the internal structure of the firm, not an external force, was the reason for the rapid employment turnover. These hand simulations launched the field of system dynamics (Radzicki and Taylor 1997).
additional floor may stress the foundation causing it to crack and shift. It might turn out that before adding weight to the house, foundational reinforcement is necessary.

If the homeowner and her contractors are not thorough, the additional square feet of space could also strain the existing heating, plumbing and electrical systems. There may be inadequate plumbing for the additional bathroom resulting in the sewer system backing up. The furnace may not be powerful enough to heat the additional space turning it into an inefficient workhorse with a decreased life span. An overloaded electrical system could result in a catastrophic fire. By considering all the parts of an overall system, rather than looking at an isolated part, outcomes or events that could potentially contribute to negative unintended consequences are diminished.

Author and naturalist John Muir explained sustainable systems thinking when he said, "(w)hen we try to pick out anything by itself we find that it is bound fast by a thousand invisible cords that cannot be broken, to everything in the universe" (Limbaugh and Lewis 1985). In other words, everything is connected. Because the work we make as designers have a profound impact on living systems, communication design students should learn how to design in innovative ways to make those systemic impacts positive.

2.2 Sustainable Systems Thinking in Communication Design

Sustainable systems thinking in design uses an alternative approach to traditional design that recognizes the impacts of every design choice on the Quadruple Bottom Line. It eliminates, not just reduces, damaging consequences by using careful assessment and
clever design to remove harmful products and processes. For example, a favorite paper brand manufacturer could be releasing disastrous carbon emissions, outsourcing its jobs overseas thus depleting the local economy, and destroying a habitat for endangered species. On the other hand, more thoughtful paper choice could have the opposite effect. A responsible paper company creates paper from agricultural residue through the use of renewable energy and recycled water, employs people from the local community, and transports their product with fleets of electric vehicles.

There are many factors to take into consideration when looking at the effects that a design outcome may have on the Quadruple Bottom Line. At times, the social impact of a design solution may outweigh the possible negative environmental impacts resulting from production or disposal of a design. For instance, one of the most effective ways to engage non-English speaking low-income communities can be through printed materials. To promote a beneficial new government service to a low-income community with a large non-citizen population, the most effective solution may be creating a brochure in several languages. We cannot weigh the value of the design solution independent from the purpose of the design. There is a trade-off that occurs when considering the most effective method for communication with no simple solution. The choice to print thousands of brochures, as described in the example above, consumes

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9 The unused remains of plant crops that are often burned in the field, creating air pollution. In North America over 200 million tons of agricultural residue goes unused (Markets Initiative). Selling this fiber to paper mills can reduce air pollution and save trees by replacing wood fiber for making paper.

10 An assessment standard for communication design projects would be a helpful way to measure impacts, similar to LEED for architecture or Cradle-to-Cradle for products, as discussed in Chapter 1.
natural resources, adds to pollution, and costs taxpayers money. However, the end result educates the community about an important service that improves standards of living and provides an important benefit. In this case, the designer can employ innovative ways to create and produce the brochure to mitigate any negative impacts. The process can involve a give and take, and is often times challenging, particularly when designing in a larger organization where the designer may have little influence. It is difficult to create a solution that is completely benign. Most often, even the most sustainable solution has some sort of adverse environmental impact and is likely to have effects on other parts of the Quadruple Bottom Line. Ideally, however, a design solution would create a positive outcome in a closed loop cycle where its disposal and decomposition means nourishment for new growth. An alternative, yet equally optimal, solution is upcycling a design after its intended use. A lot of work needs to be done before this closed loop approach becomes standard design practice.

Historically, a communication design problem is addressed in isolation with the goal being a tangible set of outcomes. In school or in the workplace, project assignments and creative briefs require creating material artifacts. This has meant that a project is either printed or developed digitally. In a typical design situation example, the designer or design team is tasked with the job to “design a direct mail piece to encourage voting.” Typically designers would tackle the assignment by looking at a very small set of

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11 Unlike recycling which can reduce a material’s strength or quality after being recycled numerous times, upcycling, a term coined by William McDonough and Michael Braungart, refers to the process of converting a material into something of similar or greater value in its second life (McDonough and Braungart 2002).
variables: text and image design, paper, and printer. The final format has been pre-determined. In contrast, designers using a systems approach would look at the underlying cause of low voter turnout and revisit the intended outcome of the mail piece. They would expand the view past the printer and paper to materials, people, transport, air, water, politics, psychology, anthropology, business, etc. Solving this challenging problem would require asking tougher questions and consider alternative solutions. What motivates citizens to vote? What do the data suggest? How do wealthy, middle class, and low-income people view the political system? Who is involved? Who do we need to collaborate with? It might become clear that by asking these questions, that printing thousands of direct mail pieces adds a considerable amount of carbon emissions into the atmosphere, wastes money, and targets the wrong audience. At under a three percent response rate, direct mail may not be the most effective solution (Chief Marketer 2003).

A sustainable approach would involve trans-disciplinary collaboration and examining a larger more complex set of issues such as the questions outlined above. The solution to the problem may involve designing a method to change public policies, developing an interactive mobile application, working with a non-profit involved in the community, and quite possibly developing an awareness campaign that includes more traditional design outcomes like a direct mail piece.

Through the sharing of knowledge and ideation by collaboration, communication designers can work to develop effective sustainable solutions appropriate to the culture and environment in which their designs will be implemented. Designers should be
mindful of how the impacts from a single decision affect other parts of the system from the people in the supply chain, to the animal habitats affected by the materials sourcing to the financial limitations of the intended consumer. A decision on any part of a design requires that a balance process be in place for all other affected parts. As of now, there are no official standards from which to follow, rather the designer or design team must be armed with knowledge and ready to question all decisions. This approach is the beginning of practicing sustainability in the communication design field.

It is imperative that much like typography and composition is stressed at the beginning and throughout formal design education, sustainable systems thinking must share the same focus. By doing so, I believe it will become part of the design thinking process and not an afterthought, or worse, not thought about at all. In fact, sustainable design should be synonymous with good design.

2.3 The Elements of Design Sustainability

Many communication design solutions are produced for rapid speed, disposal and replacement, which have profound negative impacts on environmental health, economic vitality, social growth and cultural respect and preservation. Referred to as the Quadruple Bottom Line, these four elements are interrelated and distinct. I believe they are directly affected by the communication design field and are worth investigating further.
The “DO-ference” session at the 2012 Design Ethos conference hosted by the Savannah College of Art and Design (SCAD) provides an opportunity to examine one project’s relationship to the four qualities of the Quadruple Bottom Line.

2.3.1 Society

Communication design can raise awareness, motivate action and change behavior. Through its messaging and function, design can establish ideas of equality and compassion that help foster a sense of community in which all members of society can unite. Social innovation through communication design applies new strategies and models to solving tough challenges and helps to strengthen a community. The DO-ference session exemplified design for positive social change.

The Do-ference consisted of groups of collaborators working together on a revitalization project for Waters Avenue, an economically depressed neighborhood in Savannah, Georgia. Six teams consisting of twenty participants gathered and over forty-eight frenetic hours, developed their ideas for Waters Avenue. Each group consisted of one community leader, one local businessperson, one high school fellow, one local expert, one municipal staff member, five university students, two design professionals, seven conference attendees and one future voice. The teams met local residents, toured businesses, walked the neighborhood and ate lunch with community participants.

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12 Future voices were charged with analyzing the projects’ future potential and viability.
before they began working on the solutions they would later share with all of the
attendees at the conclusion of the Design Ethos conference.

SCAD professor and Design Ethos conference facilitator Scott Boylston shared his
thoughts:

Charged with developing a solid foundation for future successes, each team
created a breadth of deliverables that ensured resiliency for ongoing
development, and targeted and empowered local champions for each proposed
solution and their future stages... There is much talk of design performing as a
catalyst for positive change. But in such conversations, the focus is frequently on
the solutions rather than the process. Design Ethos’ insistence on the design
process as being as essential to any forward motion as the solutions opened the
door to a different kind of design dialog between practitioner and ‘user’
(Boylston 2012).

The 400 lb Baby, a solution proposed by one of the DO-ference teams, is a
wonderful example of a successful collaboration for positive social change. In 1976,
forty large planters were installed along Waters Avenue with the goal of beautifying the
area. Now, only twenty-six of the original planters remain. These neglected planters
have become nothing more than garbage pails and ashtrays.
The DO-ference team created a way to reuse those 400-pound planters with the goal of bringing art and dialogue to the neighborhood. The 400 lb Baby was born. Each planter was given a name and adoption cards were created for each “baby.” Businesses,
neighborhood organizations and residents are encouraged to adopt a planter with the idea of showcasing art or cultivating plants and flowers. The 400 lb Baby project has helped bring the community closer through discussion and involvement.

In most areas of communication design, designers are trained to create eye-catching, persuasive work that either elicits desire in the viewer or motivates an action. With such an influential position, and as illustrated with the 400 lb Baby project, designers can affect people’s behavior such as purchasing a new product, strengthening brand loyalty, or changing opinions. Communication design, with the help of marketing strategists, narrows their focus on “target markets” for advertising. Target marketing can be helpful to communicate messages to intended audiences, but it can also be used to manipulate and prey on vulnerability. Historically this was prevalent with cigarette advertising to predominantly poor, black communities. As a result, black Americans are the only ethnic group to suffer disproportionately from smoking-related diseases (U.S. Department of Health and Human Services 1998).

Although heavily targeted to black Americans, cigarette advertising was boosting overall sales among all races. Tobacco International, a leading industry journal, ran an article about cigarette consumption that stated: “the rise in cigarette consumption is basically due to advertising” (Bates and Rowell 1998, 46). The cartoon “Joe Camel,” a $75 million per year promotional campaign, was meant to “appeal to younger, male smokers, who had been deserting Camel in droves” (1998, 47).

Advertising an addictive product that has been proven to be linked with serious health risks is ethically irresponsible and harmful to society. The argument could be
made that people are free to choose whether or not to smoke, however, communication designers are trained to persuade and convince others through their work. Given the role of designers in marketing and advertising, the AIGA, The Professional Association for Design, proposes a set of standards of professional practice that define the expectations of an AIGA member. Section 6.1 reads: “A professional designer shall avoid projects that will result in harm to the public” (AIGA 2013). If a communication designer is committed to practicing sustainability, ethical considerations become a factor in their decision-making. Designer’s skills are put to better use designing for the greater good than for the profit from promoting harmful products.

As designers aim to receive fair compensation for their skills, a safe and comfortable work environment, benefits, and a reasonable workweek, it is fair to also consider the impacts of their projects on workers up and down the supply chain. To help foster thriving and healthy societies, employers must treat workers fairly by providing living wages, health care, safe working environment and family emergency leave, for example. The International Labour Organization’s Declaration of Fundamental Work Rights include the freedom of association and the effective recognition of the right to collective bargaining, elimination of forced or compulsory labor, abolition of child labor, and the elimination of discrimination in respect of employment and occupation (ILO n.d.).

Looking closely at immediate vendors, such as printers and paper distributors with whom designers have direct contact is important. Equally important are the subcontractors’ workers and vendors further down the supply chain. These workers are
out of direct sight, such as workers at the paper mill, tree plantation, recycling facility, ink manufacturing plant or the transportation companies, and can be easily overlooked when considering the ethical employment practices of vendors. Fair human and labor rights help to ensure healthy and happy societies. It is with vendors and the connected supply chain that communication designers can reinforce positive behavior by inquiring about worker’s well-being and only working with vendors who adopt fair employment practices.

In addition to materials and vendors, the design itself can have drastic effects on society. Designing for social sustainability means to make responsible decisions that can affect our “global community.” Food, shelter, health and safety, freedom, education and dignity are important basic human needs that should be addressed in or as a result of design work. In the Do-ference session example, the neighborhood revitalization project is connecting community members and strengthening relationships thereby improving the overall conditions along Waters Avenue.

### 2.3.2 Environment

The 400 lb Baby project is having a positive effect on many areas of the Quadruple Bottom Line, including the environment albeit in a small way. Preceding the Do-ference, the planters along Waters Avenue were neglected. Litter collected in and around the planters, giving the impression that the neighborhood was not cared for. The planters that have been adopted are no longer used for unsightly garbage. Additionally, this project has given the planters a second life. While litter reduction and aesthetic
improvement are a small gains, incremental steps often times make way for larger positive change.

Focusing on mass production, Pulitzer prize winning author Russell Baker once said, "The American dream is to turn goods into trash as fast as possible" (Kirkos 2007). Communication designers have developed a means of creating materials readily available for immediate consumption and disposal. For example, packaging accounts for the largest percentage of waste in United States landfills: thirty-one percent (EPA, 2010). While some packaging is necessary for protection or sanitation, packaging is ultimately designed trash. As one example of a linear design-consumption model, packaging is unsustainable at its very core. It is a one-way system that does not return any benefit to nature as part of the end result.

Materials sourcing and manufacturing, mass production and printing waste, transportation, consumption and disposal have resulted in unprecedented and irreversible environmental damage. When considering the impact of any product we must consider where and through what process the materials were originally sourced. It is important to question whether or not the materials used in a design project were obtained through strip mining, clear-cutting or other damaging methods. Fuel used in each step of transport is another factor in determining the overall impact of a project. The oil that fuels most transportation is not only environmentally catastrophic in its
retrieval (recall the 2010 Gulf oil spill\textsuperscript{13}) but also in its consumption (carbon dioxide and particulate emissions). Equally critical is the energy and water use as well as the resulting waste created during the lifecycle of the design. Communication designers must consider if the discards could leach toxic chemicals into the ground water or release harmful gases into the atmosphere contributing to climate change.

It will not be enough to design “less bad” by reducing a design’s environmental footprint. At a minimum the impacts of our designs must be benign. However it is increasingly necessary to design in a manner that enriches or positively impacts ecological systems. Architect William McDonough and Chemist Michael Braungart propose a “Cradle to Cradle” approach to designing which reframes design as a beneficial, regenerative force (McDonough and Braungart 2002). The Cradle to Cradle principles adhere to following nature’s example of growth where waste becomes nutrients for nourishing more growth in a continuous healthy cycle.

Desso, a flooring company based in the Netherlands, is one example of McDonough and Braungart’s approach. Desso received a Cradle to Cradle certification for its EcoBase carpet tile backing. Ninety-seven percent of the materials in the carpet backing were determined to be optimal or tolerable according to the Cradle to Cradle assessment criteria. The backing is completely recyclable in the company’s own

\textsuperscript{13} The 2010 Deepwater Horizon oil spill (also referred to as the BP oil spill or the Gulf of Mexico oil spill), which occurred in the Gulf of Mexico, is considered the largest marine oil spill in history. Due to the explosion and sinking of the Deepwater Horizon oil rig, oil gushed from the sea floor until it was capped eighty-seven days later. The total amount of oil spilled is estimated at 210 million gallons (The New York Times n.d.).
production process. Through the Desso carpet Take Back Programme, yarn and other fibers are separated from the backing. The yarn is sent back to the suppliers for recycling and the bitumen is sold to the road and roofing industry. All non-recyclable fractions are used as secondary fuel in the cement industry. Additionally, the printed brochures for marketing the carpet are created from the same ingredients used in the Desso carpet tile backing. The brochures are printed and bound according to the Cradle to Cradle principles. Desso requests that customers return unwanted brochures to be reused in their carpet tile backing. Desso works with its customers to achieve a continuous closed-loop cycle and provides a model of environmental stewardship. Desso is an outstanding model for positive design solutions that should be translated to communication design practice.

2.3.3 Economy

Organizations such as Desso and projects like 400 lb Baby are pushing the tenets of design forward. Both of which are also promising examples of economic sustainability and resiliency. Although there is no published information about the benefit to local businesses, the Waters Avenue 400 lb Baby project continues to improve the overall conditions for residents and businesses along Waters Avenue. Desso’s closed loop cycle helps the economy by preserving valuable resources and reducing pollution.

More than $500 billion was spent on advertising globally in 2012 (Nielson 2013). Often times communication designers help to create advertisements that lure consumers to purchase new products, contributing to the linear and unsustainable path
of production, consumption and disposal. Papanek refers to the creation of invented needs; of persuading people through design to spend money they don’t have in order to buy things they don’t need (Papanek 1985). A one-way system of consumption and disposal results in dwindling and degraded resources. The effects of supply and demand are apparent when resources become scarce or more difficult to obtain resulting in increasing costs. Hawken, Lovins, and Lovins address this issue in the book Natural Capitalism: Creating the Next Industrial Revolution.

How is it that we have created an economic system that tells us it is cheaper to destroy the earth and exhaust its people than to nurture them both? Is it rational to have a pricing system that discounts the future and sells off the past? How did we create an economic system that confuses capital liquidation with income? Wasting resources to achieve profits is far from fair, wasting people to achieve higher GDP doesn’t raise standards of living, and wasting the environment to achieve economic growth is neither economic nor growth. (Hawken, Lovins, and Lovins 2000, 321)

Sustainable solutions, no matter how innovative, cannot be successful if they are financially unfeasible. Communication design work that is expensive to produce due to costly materials, large quantity, exotic finishes or specialty processes must be compensated for elsewhere. To recoup the expenses from design and advertising, organizations or businesses may make up the cost in other ways. Generally the cost is regained at the expense of the consumer or, even worse, at the expense of the worker. Underpaid and overworked employees living below the poverty line are unable to contribute back to the local economy. Consumers may be asked to compensate for the expense of production in which case the product becomes unobtainable to many people. Such a system seems acceptable to most consumers when referring to luxury items such
as entertainment, beauty products and couture, however, inequality becomes truly apparent when financial disparity affects basic needs items. When access to quality food, shelter, medicine and education are limited because they are unaffordable, economic inequality has a negative affect across the entire Quadruple Bottom Line.

Designers can employ creative approaches to generate value and opportunity that creates economic vitality. Systems thinking’s application to design takes into account the long- and short-term economic impact and accessibility of the design itself. Is the design democratic in its message or does it only communicate to “elite” groups? Is it possible to create messages or design projects that speak to all people? Cultural differences should be celebrated, in which case the ability to connect emotionally or empathetically with a specific piece of work will resonate differently among different groups. Can we have “design for all”? The realistic answer is probably not. The larger question is not if, but how does this hinder economic sustainability?

Equally important to materials used in projects, designers must also consider the tools with which they work. As writer and design historian Penny Sparke explained, “If the culture of consumption makes design necessary, technological progress makes it possible” (Sparke 2004, 4). The rapid growth of economic activity in computers and electronics has resulted from a system of planned obsolescence. Technology, designed purposefully to make upgrades or repairs close to impossible, has been increasing at a blistering rate thereby creating the need to replace electronics quickly. A result of this quick turnover has created an abundance of electronic waste, or e-waste. While organizations have been founded to recycle electronics, planned obsolescence is
financially unstable in the long term as the quantity of raw materials decreases and the cost of the diminishing materials increase.

Combating the problem of e-waste, the Responsible Electronics Recycling Act bill (H.R. 2791) which is currently pending in the House of Representatives would prohibit the U.S. from exporting certain electronic waste. It seems likely that the passage of H.R. 2791 would help the U.S. economy. Exporting electronic waste overseas drives up the cost of materials because less is available for domestic recycling programs. Therefore, the U.S continues to export the waste to other countries because the infrastructure for e-waste recycling is not lucrative. This continuous exportation hampers domestic recycling efforts by making the process too expensive to operate in the U.S.

Alternatively, if the U.S recycled its own e-waste, the domestic recycling industry could benefit by lowering costs for recycling and thus lowering the cost of new electronics. Supporters of H.R. 2791 argue that “requiring domestic recycling may create up to 42,000 new jobs with an annual payroll of up to $1 billion” (Kavanaugh 2013).

Communication designers commonly rely on their computers and other electronic devices for their everyday work and play a part in the consumption and disposal of these devices. Designers can impact the economy not only with the equipment they use, how it’s cared for or disposed of, but through their work. By applying sustainable systems thinking, designers can bring to light the issues of financial inequity and can affect how groups and organizations define economic success.

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14 As of Q1 2013, Apple has sold over 4.1 million Macs and a combined 796 million iPods, iPhones and iPads (Michaels 2013).
2.3.4 Culture

Cultural sustainability is the “consideration, understanding and respect for heritage — the identities and values that bind people to places with local, national or ethnic relevance” (“Center for Cultural Sustainability at The University of Texas at San Antonio” 2013). The preservation and perpetuation of cultures is integral in the balance of the Quadruple Bottom Line because for many, culture is a value system, something that is rooted in tradition, is cared about, nostalgic or a way of life. Culture is happiness and comfort for many. Communication designers have a large influence on cultural sustainability through the sourcing of materials chosen for projects and the messages communicated in their work.

The logging industry has had a disastrous reputation with concern for cultural sustainability. Paper companies worldwide have been known to log forests or establish tree plantations without gaining the consent of local communities or indigenous peoples who have customary rights on that land. Many indigenous or local groups have been living on their land for generations. They rely on the local forests for food, shelter, commerce, and spiritual ties. Entire villages in countries such as Indonesia, Brazil, Tanzania, and the Boreal forest in Canada, have been forced from their land, often times through the use of armed police or the military, in order to have their land destroyed by logging (The Green Press Initiative n.d.). Such practices leave the affected groups of people with no land or sustenance. In some cases, protests against forced exile have resulted in violence and casualties.
The following is an excerpt from a detailed report on the human rights abuses that have occurred in Indonesia as a result of corrupt practices in the country’s pulp and paper industry:

The vast plantations supplying Asia Pulp & Paper (APP)—Indonesia’s largest paper producer and owner of one of the largest stand-alone pulp mills in the world—were established in Riau during the 1980s and 90s largely on land unlawfully seized from indigenous Malay and Sakai communities, without due process and with little or no compensation. These land seizures took place under intimidation by armed police and military agents. Expansion of wood-processing capacity beyond what plantations could supply, in turn, led to wholesale destruction of forests—an outcome which, together with companies’ hiring of employees from outside the province, has been devastating to the livelihood of forest-dependent communities (Human Rights Watch 2003, 3).

The paper industry is a befitting example of how the demands of our industry directly affect cultures. Tree fiber is the most prevalent material used for print and packaging design. In the printing and writing sector commercial printing consumed the most paper by volume, therefore designers must pay heed (RISI 2013). However, the pulp and paper business is only one example of the many industries that have been known to exploit vulnerable groups of people for profit. By making careful and informed decisions in material choice designers can support companies and their suppliers that respect human rights and work to preserve cultures. An increased awareness of a need for attention to cultural preservation as a necessary part of communication design can help to foster positive change up and down the supply chain.

Increased understanding and acceptance can also be achieved through design that crosses cultural barriers. The message of communication design projects, the audience, and the use of the design itself can inspire cultural diversity and respect as
seen in the 400 lb Baby project. Bringing together people through a common goal helps to unite and strengthen local residents and business owners connection to place. When conversations began regarding the revitalization project, Waters Avenue resident and artist, Jerome Meadows explained that art and culture needed to be part of the revitalization. As a major participant in the revitalization project, he said, “Culture and art is one of the best tools in earth for discerning what people have to say about something... revitalization has to be about the people” (“City of Savannah” 2012).

Designers have the creative skillset to address the needs of various cultures and enrich lives. The Waters Avenue project is one example of this philosophy.

2.3.5 Conclusion

Although the 400 lb Baby project is currently stalled by the city of Savannah, the project has become even more popular since the Design Ethos conference. Community reaction has been positive and many of the planters have been adopted. SCAD students and the neighborhood association are working tirelessly to get the project moving again. Many local businesses and residents are very supportive of the project and two businesses are ready to adopt planters once the project is approved by the city.
Figure 2.3 Carly Ayres, “Josh McManus presenting the stork and its 400 lb. baby,” Core77, April 23, 2012, www.core77.com/blog/conferences/design_ethos_day_three_22289.asp.

Figure 2.4 Marina Petrova, Promotion for the 400lb Baby project along Waters Avenue, 2012, www.facebook.com/400lbBaby.
Figure 2.5 Marina Petrova, “Eyes, faces, hands and art from the community to the community,” Design Ethos Blog, September 27, 2013, www.designethos.org/wp/2012/09/27/a-new-baby-is-born.

Just like with the 400 lb Baby project, many issues in each sector of the Quadruple Bottom Line overlap, and rightfully so. The interconnectedness of all parts makes it impossible to segregate each portion of the Quadruple Bottom Line into four neat containers. It is useless to discuss e-waste in isolation as an economic concern without mentioning its threat to society (human well-being), environment (ecologic health) and to cultures (heritage preservation). As e-waste impacts one component of the Quadruple Bottom Line, it affects all four. To create positive change from communication design work, designers must balance all processes and decisions—from
the concept phase to disposal/reuse—to determine who, what and where will be effected.

When approaching communication design problems, designers can use their creative thinking to develop solutions that are environmentally restorative and adaptable, financially viable, and that help strengthen societies and cultures. Yet, my observations and research leads me to conclude that sustainable systems thinking in communication design practice is not an inherent skill. While some designers seem to possess prowess for typography or illustration or color, the ability to design responsibly and for resiliency is not something many designers consider without guidance. Awareness and education bring to light the power designers have to make a difference. It stresses the importance and the immediacy of the issues surrounding the Quadruple Bottom Line and why doing “good” design benefits all aspects of our living systems. Integrating this methodology into communication design curricula would allow students, early in their training, to use sustainable systems thinking by default as part of the design process moving forward.

Once designers begin to employ a “larger view” way of thinking, prescribed outcomes are met with more innovative and overall sustainable solutions. This means that rather than creating the expected result—a direct mail campaign about voting—designers working in collaboration can develop unexpected solutions that go beyond the traditional short-lived message. Now that mail piece about voting with a less than stellar response rate evolves into designing a creative solution that greatly increases voter activity in a particular district.
An effective approach to sustainable systems thinking and achieving such a solution includes the following steps: 1) Define project goals. What should the end result achieve? 2) Brainstorm alternatives. How can you use your design expertise to guide your client to the best possible solution, even if it’s different what they think they want? 3) Map out possible scenarios. What are the direct and indirect effects? What are the risks and benefits associated with each solution? 4) Evaluate project outcomes. Which option meets the client’s needs while having the greatest positive impacts? (Perullo and Benson n.d.)

If printed outcomes are a necessary part of the solution, the best approach is to “design backwards.”

By beginning the design process considering the design’s end of life, negative effects can be designed out of the equation. The most challenging part of a physical design is effectively creating products that can be reused or upcycled. Learning how to accomplish sustainable and long-lasting solutions from the onset of design education would train designers in sustainable systems thinking at an early stage. With proper training, exposure, experimentation and guidance, future designers will possess the skills to make positive and responsible choices. Though, there is a disparity in traditional education between the need for, and the availability of, sustainable design. While the topic is not commonly integrated into the curricula of many design programs, it remains up the individual educators to adopt. My research reveals that design faculty

15 A formula introduced by Brian Dougherty in his 2008 book “Green Graphic Design.” Based on this system, designers start from imagining their design’s ultimate destination and working backwards to the first steps. In this way, designers can predict some of the problems that might prevent green processes and therefore, they can avoid these problems from the very beginning.
commonly lacks the knowledge to teach sustainable design, lack the tools to incorporate it into their coursework, or both. To help bridge this gap I have developed a resource to assist in bringing sustainable systems thinking into communication design classrooms.

The next two chapters describe the methodology and analysis of my research. Chapter 3 explains the intentions behind the design alumni surveys, design educator interviews, and the research into curricula and existing tools. Investigation and evaluation into these sources has helped realize a need for more robust educational tools as demonstrated in Chapter 4. Survey results and educator interviews reveal the need for a curricula change beginning with a comprehensive teaching resource.
CHAPTER 3. RESEARCH DESIGN AND METHODOLOGY

3.1 Rationale used for selecting the sources to analyze

To better understand how to implement sustainable systems thinking into communication design curricula, I have researched and collected data from four main sources: 1) undergraduate communication design alumni, for insight into recent design programs; 2) communication design educators, for their views on teaching and development; 3) existing curricula from various communication design programs to determine the most flexible solutions for a range of programs, and; existing online educational aides focused on sustainability.

3.1.1 Design Alumni

The goal of surveying communication design alumni was to measure the level of demand for environmental, economic, social, and cultural sustainability topics in design education from recent communication design alumni. I was interested to learn about which programs included sustainability education into the communication design programs and which specific topics on sustainability that students hoped to have learned. Surveying recent alumni from communication design degree programs has allowed me to gather information from students who have completed their coursework,
and have had time to reflect on their education. The survey was limited to recent alumni—designers who have graduated within the past five years—so that the information is current and accurate (less memory fading due to time). Graduated students were chosen for the survey over students who are currently enrolled because current students may not yet be aware of upcoming courses or some students may be unsure about what they want from their education. Graduated students who were working as designers at the time of the survey could also provide insight to whether or not they were having conversations with their clients or employers about sustainable design work. A copy of the design alumni survey is attached as Appendix A.

3.1.2 Design Educators

Communication design educators have hands-on knowledge and ideas about implementing sustainability principles from a different perspective than that of students. Because curriculum modification would affect educators’ methods and approaches, it was imperative to get their opinions and ideas directly. Two types of educators were chosen for interviews. The first group consists of educators who have implemented sustainable pedagogy into their coursework, which allowed me to learn about their methods, criticisms, ideas, et cetera. In contrast, the second group is the educators who do not teach sustainability topics as part of their coursework. This information helped to determine the tools and aids, if any, that educators would want to help integrate sustainable systems thinking in their classes. The interviews allowed for a thorough understanding of their opinions and advice regarding the adoption of new content or
methodology into design courses. I was interested in learning about previous curriculum development, whether or not it was successful, and why it did or did not succeed. It was important to learn if there exist any roadblocks to adding sustainability principles into design courses or into the entire curriculum. A copy of the interview questions is attached as Appendix B.

3.1.3 Curricula and Plans of Study

The plans of study and curricula in communication design programs in higher education, including Purdue University, were chosen to aid in the development of effective faculty tools for the implementation of sustainable systems thinking. Some of the programs which have a sustainability focus such as:

- Savannah College of Art and Design: Design for Sustainability Master of Arts program
- Minneapolis College of Art and Design: Master of Arts in Sustainable Design program
- Parsons College: BFA in Integrated Design and Master of Fine Arts in Transdisciplinary Design, and the new MFA in Design for Social Innovation at the School of Visual Arts (established fall 2012). Details of these programs will be introduced in 4.4.
Although my research focuses on the inclusion of sustainability pedagogy in undergraduate programs, I have looked to many graduate programs on sustainability because at the time of this MFA thesis, Parsons and the Art Center College of Design are the only undergraduate programs that offer a sustainability focus.

3.1.4 Existing Frameworks

Organizations that offer tools or resources about teaching sustainable communication design provided practical insight. It was important to learn about any similar resources currently in existence for multiple reasons. First, I was interested to know what information or tools are available online, what the online community dynamic is, and who are the people using the site. Second, examining existing frameworks could assist me in determining if and what important information or tools were missing. Third, examining comparable educational websites on sustainable design pedagogy helps to provide a baseline for available tools and how such tools can be improved for greater usability. I have reviewed websites such as Design Ignites Change (Design Ignites Change n.d.), Adobe Education Exchange (“Adobe Education Exchange” 2013), Living Principles (The Living Principles for Design n.d.), Design Thinking for Educators (Design Thinking for Educators n.d.), and Creative for a Cause (Creative For A Cause n.d.).
3.2 Methods for Identifying and Locating Sources

A mixed-method research approach was used to gather information that incorporated both qualitative and quantitative data. The goal of this mixed-method research is to gather insightful information with more than one type of investigative perspective (Creswell and Plano Clark 2010). To collect data from recent communications design alumni, I administered an online survey. The questions in the survey were designed to collect information about whether or not sustainability was implemented into a participant’s design courses or program of study.

Qualitative information allowed for more in-depth responses and additional information that quantitative data obtained through a survey could not provide. I contacted five college educators in communication design programs to conduct telephone, Skype or in-person interviews.

In addition to surveys and interviews, online research has allowed me to gather the curricula and study plans from various institutions. By comparing and analyzing the data from a variety of sources, I was able to determine that implementing sustainable systems thinking into communication design courses would require flexibility and modularity to appeal to a wide range of educators.
CHAPTER 4. ANALYSIS

To better understand the need for incorporating sustainable systems thinking into communication design education, I conducted an online survey with recent design alumni, interviewed design educators, analyzed curricula and researched available online resources. The results of my study illustrate students’ lack of sustainability education in various postgraduate institutions, yet show their desires to learn about sustainability as it closely relates to the goal of communication design. I was informed about the resistance or hesitation of some faculty and departments to incorporate sustainability pedagogy hindering its inclusion into curricula. Researching has allowed me to better understand how to approach fundamental change in communication design curricula.

4.1 Design alumni survey analysis

4.1.1 Participants

A total of 173 graduates from twenty different colleges and universities responded to the survey with a median graduation year of 2009. The biggest number of responses came from Purdue University, University of Notre Dame, The New England School of Art & Design at Suffolk University, and the University of Texas at Austin.
The average respondent has been working in the design profession for 3.68 years post graduation. A majority of the surveyed alumni currently work as freelancers. Twenty-three percent of those surveyed work in a design studio or agency, while twenty-two percent work as part of an in-house design team. Twelve percent of those surveyed are not currently working in the design field.

![Pie chart showing majors]

Figure 4.3 The division of respondents' majors

Nearly twenty-nine percent of the respondents received a Bachelor of Arts (BA) degree. A Bachelor of Fine Arts (BFA) degree was the second most common at twenty-six percent. The remainder of respondents’ degrees included Master of Arts, Master of Fine Arts, Associate, Certificate and Minors.
4.1.2 Results

Did your undergraduate degree provide you with information about sustainable design?

Twenty percent of respondents received no information on sustainable design during their education. Thirty-two percent of the respondents had very little education on sustainable design during their coursework. Twenty-six percent replied that they received some information while twenty-one percent received a good amount.
What specific aspect(s) of sustainability did you learn about through your design program or courses?

Among the four areas, environmental topics were the most popular of the students that received any education on sustainability. Social topics were the second most common. Twelve percent of students received no sustainability education in their programs.
Would you have liked to learn more about sustainable design?

Seventy-nine percent of those surveyed responded that they would have liked to learn more about sustainable design. This overwhelming response illustrates the desire from students to include this topic in their educational experiences. When broken down further, the alumni answered that they would have liked to learn more about each aspect of sustainability relatively equally.
Were you assigned any projects involving sustainability during your course work?

Forty-five percent of students were assigned projects involving sustainability in their design coursework. Many students explained that the projects regarding sustainability consisted of awareness poster projects, invitations for a nonprofit organization event, packaging projects, and reusable signage. Two responses described experiences designing shelters in third world countries and one respondent traveled abroad to work on a community project onsite. In summary, a majority of the projects described by the alumni were individual projects focused on sustainability as a separate topic. Few were larger-scale projects that encompassed developing holistic solutions to design problems.
Did your design program offer specific courses on design sustainability?

Eighty-three percent of students were not offered classes on sustainability in their design programs. Of the remaining seventeen percent who were offered such a course, some of the course titles included *Ethics of the Designer in the Global Economy*, *Designing for the Greater Good*, *Environmental Design*, *Design Rebels*, and “Sustainable Design.”

Aside from the individual projects described in the previous question, the survey responses reveal that design programs have not prioritized sustainability as an important aspect of design education.

Did your program uniformly integrate sustainable design methodology into its core curriculum? (For example, was sustainability discussed in the majority of your design courses and was sustainable design process encouraged throughout your academic career?)

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16 The official name of the course was *Sustainability and Ethics in Graphic Design*, a seminar course I proposed, developed, and taught at The New England School of Art & Design at Suffolk University in the fall 2009. Six students enrolled in this first-of-its kind sustainability course offered in the design school.
Seventy-three percent of alumni surveyed answered that their design program did not integrate sustainability into the core curriculum. A few respondents explained:

“There was not nearly enough courses that provided information on sustainability. The only course that I took was the only course offered on sustainable design.” (Visual Communications Design student at Purdue University)

“As far as I knew, I was the only one in my class concerned about sustainability.” (Graphic Design student at The New England School of Art & Design at Suffolk University)

Notre Dame alumni explained their experience:

“There wasn't a big destination [sic] between the design we learned that was or was not sustainable. The general attitude of the department seemed to be that sustainability is not a cherry on top of design - it is an integral part of the process.”

“At the University of Notre Dame, sustainable/social design is built into the fabric of each program. All BFA students are encouraged to pick a thesis topic that addresses a social issue, and use design to help others.”

“It was frequently discussed and talked about. Projects were often evaluated in terms of sustainability, even when it wasn't a core focus.”

How much demand is there from clients for sustainable design for their projects?

Only fourteen percent of survey participants have seen a good amount of demand from clients for sustainable projects. The largest group, at twenty-seven percent, has seen very little demand for sustainability from their clients.
Figure 4.9 Division of participants’ clients’ request for sustainable design

*Is sustainability thinking incorporated into your current professional design work process?*

Figure 4.10 Degree to which sustainability is incorporated in participants’ current work
4.2 Alumni Survey Analysis

Although slightly less than half of the communication design alumni surveyed were assigned projects involving sustainability in their design coursework, a majority of the projects focused on sustainability as a separate consideration. From my personal experiences and observations in academia, I can attest that this is common practice.

Many undergraduate students in Visual Communication at the University of Notre Dame are focusing on real-world problems and working toward a more holistic approach to designing as it relates to the social good. However, this methodology is characteristic of one particular professor’s courses. Although it permeates the program, sustainability is not a specific theme and it is not a component of the curriculum.

Alumni show great interest in learning more about sustainable design and responded that they would have liked to learn more about the topic in their formal education. This indicates that there is a need for overhauling curricula not only for improving the Quadruple Bottom Line, but also to accommodate students’ interests in sustainability.

In their careers to date, alumni seldom see requests from clients for sustainable design. Of the respondents who are having conversations with their clients about sustainable design, it was not indicated if the conversation was initiated by the designer, the client or mandated by the organization in which they are employed. Whatever the case, there is a long way to go to increasing the presence of sustainable design in the marketplace. Along with educating designers about sustainable systems thinking in degree-granting programs, there is a corresponding need for designers to be educating
their clients on the importance of sustainability in client-driven project solutions. Eventually, it is the hope that more clients will begin to make the push for responsibly designed materials on their own. This presents a challenge to designers working—or trying to work—sustainably, but for this shift to happen, communication design students must be taught how to be effective communicators and educators themselves.

4.3 Educator Interviews

Design educators are the initiators of changes in the classroom. In order to propose curriculum change or provide tools to aid in this shift, educators must be on board. Discussing ideas with current educators from different backgrounds and perspectives on the topic, helped to shed light on possible resistance and likely obstacles that may hinder change in design education. Each of the educators interviewed were chosen for their extensive backgrounds in communication design education, administration, curriculum development, and sustainable design knowledge.

Professor Scott Boylston, Professor and Program Coordinator at Savannah College of Art and Design (SCAD), has extensive experience with educating designers about sustainability as the co-founder of the Masters program in Design for Sustainability at SCAD, author of book on sustainable packaging design, and international speaker on design and sustainability. He explains that adding sustainability elements to coursework is not that much different than what faculty is already teaching and that few changes are needed to begin incorporating sustainable systems thinking into existing project plans. This perspective makes it less overwhelming for educators to start making the
change. He believes that gathering educators in small sessions to teach them about design sustainability would help them feel more comfortable bringing it into their classrooms.

Professor Boylston suggested using an interdisciplinary approach for faculty who feel they lack knowledge or expertise in areas of sustainability in design. Collaborating with engineers, anthropologists, sociologists, and faculty in other design disciplines could enable learning and reduce the uncertainty in teaching an unfamiliar topic. Participation among diverse groups can spur active discussions and uncover innovative ideas that may not surface in a more traditional learning environment. For educators, this may mean inviting professionals or other educators from various fields into their classroom.

Time constraint is a common theme among the interviewed educators as the largest obstacle for learning about and bringing sustainability into their coursework. Laura Golly, Professor and Graphic Design Program Director at the New England School of Art & Design Suffolk University explained that with an ever-growing to-do list as an instructor and administrator, there is little time left to research new concepts and learn about new theories. She explained that “keeping curriculum relevant is tough” and time is the largest obstacle in adding new topics into courses, especially a topic as large as sustainability. Trying to learn just the basics is not good enough because the content being presented to the students needs to be rich and meaningful. Bernard Canniffe, Professor and Department Head of Graphic Design at Ringling College of Art and Design, shares a similar sentiment. He explained that, for faculty, it is purely a matter of time. If
faculty were offered a tool to help them bring sustainability into their classrooms it would need to be something they could engage with very quickly. The information would need to be structured and segmented into small bites.

Looking to younger faculty and adjuncts is advice shared by Professor Natacha Poggio and Professor Lisa Rowsowski. They believe that the younger instructors will be more open to new ideas on a lot of levels. Institutions often look to their adjuncts to bring fresh ideas to the programs so they would be a promising place to start. The less flexible nature of some of the more senior faculty could be problematic for implementing sustainable systems thinking into classrooms. Professor Boylston suggests trying to make the topic meaningful to these people. Change has to be on their terms and explain that “it’s not about changing design, it’s about improving it.”

It is expected in traditional design education that a Print Production course would assign theoretical projects to teach about file formats, “packaging” files\textsuperscript{17} and the printing process with the occasional tour of a printing facility. Professor of Graphic Design at the Massachusetts College of Art and Design, Lisa Rowsowski, takes a different approach. The students in her undergraduate Print Production course work with a community partner to address a need. During the semester, students meet with the community partners and specialists relevant to the project topic to develop a sustainable design solution. The class then works on the design all the way through to printing the deliverables (where they also learn about materials and sustainability).

\textsuperscript{17} Packaging is a method of preparing digital files to ensure all the necessary items are organized for printing. A “package” contains fonts, images, instructions and other necessary files in a single folder.
Students are able to participate in a social design project while working with a real world client and learning about the aspects of print production. Professor Rowsowski’s course is an exemplary model for integrating responsible design into a class that was not originally dedicated to sustainability. Professor Rowsowski’s Print Production course integrates the traditional and pragmatic lessons of Print Production with social design where the students gain much more meaningful experiences than the traditional model alone can provide.

Professor Rowsowski reminds us that sustainable design “can be very shallow if you’re not careful,” warning that it is very easy for design faculty to give lip service to sustainability. Professor Canniffe explains in more detail:

We've reached the peak—peak oil, the gasoline crisis, the ice caps are melting... We've reached critical mass, and yet design education is not responding to anything. If I see one more poster that says ‘Sustain! Sustain the world!’ and it's on a poster the size of a queen bed, I mean... that's mostly what you see—designers play lip service to sustainability because it looks sexy.

Natacha Poggio, Assistant Professor of Visual Communication Design at the University of Hartford, would like a website as a tool for bringing sustainability into the classroom but believes a hybrid of project examples, case studies, books, and articles are best because people learn and retain information through redundancy. Teaching sustainability to students works in much the same way. When Professor Canniffe was asked about the effectiveness of one-off isolated design projects, he explained that any exposure that students get into those ways of thinking are important. But do these little isolated things get students to think in a different way? He guesses that they do not.
Like Professor Poggio, Professor Canniffe understands that people need multiple exposures to things before it becomes a habit or methodology for them.

Professor Rowsowski explained that before and after case study examples would help illustrate the idea that including sustainability would not change the project fundamentally, nor would it have to change the pedagogy of the project. But educators need a carrot according to Professor Canniffe. He poses the question, “Why do this at all?... How will changing my teaching methodology help me get the next big job (or promotion or research money)?” In other words, how will this fundamental shift help their careers?

Lack of knowledge and not knowing where to start, time constraints and unwillingness to change were the overarching themes throughout these interviews. Helpful suggestions on tackling these issues included collaboration, providing straightforward resources, and looking to younger faculty as change agents. Additionally, each interviewee shared their perspectives about the features they would find useful in a tool for helping faculty bring sustainability into design classrooms. The consensus remained that sustainability is extremely important and communication design education is falling short on making positive change to educate students on the topic.
4.4 Curricula and Plans of Study

There are a small number of programs in the United States that offer sustainability specific graduate degrees in communication design. Minneapolis College of Art & Design (MCAD) Master of Arts in Sustainable Design is a 36 credit degree program that is offered completely online. The MCAD program “integrates the themes of systems thinking, life-cycle analysis, and biomimicry, blending theory, practice, and leadership courses into holistic and hands-on training and experience” (Minneapolis College of Art and Design, n.d.). Similarly, the Design for Sustainability program at Savannah College of Art & Design (SCAD) is a cross-disciplinary program that aims to develop “students into committed leaders and passionate agents of change for economic prosperity, ecological health and social equality” (Savannah College of Art & Design, n.d.). SCAD offers a Master of Arts degree or a Minor in Design for Sustainability.

The MFA in Transdisciplinary Design in the School of Design Strategies at Parsons focuses on the ways design transforms social relations. The program focuses on systems, sustainability, social and urban issues. Students in the Transdisciplinary Design program address pressing social issues using new ideas, tools, and methods (Parsons The New School for Design, n.d.).

In 2012, the School of Visual Arts (SVA) in New York launched a program called Design for Social Innovation. The MFA in Design for Social Innovation prepares students to “engage with and improve the world through design.” Graduates of the program will have the “skills to have a positive impact on business, society and their own lives” (School of Visual Arts, n.d.). The primary focus of this and the Parsons MFA programs
are social sustainability while taking the entire system into consideration to also include economic, cultural, and environmental prosperity.

Some innovative graduate programs, as mentioned in the previous examples, demonstrate the need for designers to address critical issues of sustainability, developing specific degree programs for the topic. Although this is less common at the undergraduate level, there are a few examples. Otis College of Art offers a Sustainability Minor to BFA students in all design majors. “The Sustainability Minor provides students with a broad understanding of the social, political, economic and environmental issues impacting the future of humanity and our planet” (Otis College of Art and Design n.d.). The sustainability program at Otis is not specific to the graphic design department, but rather it covers a broad range of sustainability topics as it relates to design as a whole for all majors.

Parsons also offers an undergraduate level degree in Integrated Design. Students in the BFA program are “social, cultural, and ecological innovators who are passionate about economic and environmental equity” (Parsons The New School for Design, n.d.). Courses such as Integrative Seminar, Sustainable Systems, and Space/Materiality cover traditional design lessons while integrating sustainable systems thinking into most of the coursework.
### Table 1 Design Programs with Sustainable Design Curriculum

Some graduate programs have sustainability courses integrated into required curricula without “sustainability” specific degrees. While these programs may not thread sustainability throughout their programs, including a required class on the topic—even as a single course—is a promising step in the right direction to making sustainability an integrated part of the curriculum. This illustrates that some programs are making room for sustainability as an important component of learning outcomes.

The University of Wisconsin-Stout offers courses such as *Ethics in Design* and *Sustainable Design Practice* as part of the core MFA curriculum. At the undergraduate level, Graphic Design & Interactive Media students are required to register for a three-credit “Social Responsibility and Ethical Reasoning” requirement. At Otis College of Art &
Design’s MFA in Graphic Design program requires a course called “Social Responsibility of the Designer.”

Stanford University’s undergraduate and graduate programs in design teach that design is always a human-centered activity and designers work for the benefit of society. Additionally, Stanford’s d.school is an innovative hub for fostering sustainable design principles. There, students are prepared to be future innovators by utilizing design thinking, participating in “radical collaboration” and tackling big projects. The d.school does not grant degrees, rather graduate students in all Stanford degree programs can participate in d.school courses as a supplement to their programs (Institute of Design at Stanford, n.d.).

Specific courses relating to sustainability are offered as electives in select design programs. Fellow Re-nourish partner Eric Benson developed his Ethics of the Designer in the Global Economy (EDGE) course to fill in for the lack of sustainability topics at the University of Illinois at Urbana-Champaign. EDGE aims to cultivate a new excitement and knowledge base for social entrepreneurship by graphic and industrial designers. The course explores contemporary ethics, social design theories, sustainable design methodologies, and case studies to help foster creative social entrepreneurs (Benson, n.d.).

At this time, very few communication design programs teach sustainable systems thinking as part of their standard curricula. As certain programs are built around sustainability with degrees named as such, and others offer specific courses on sustainable design, sustainable systems thinking is not woven into “normal” design
education. It is because sustainability is not part of standard design education that it remains a separate consideration rather than a component of all design. However the schools that integrate sustainability in communication design to various degrees—whether that is through a single class or a specialty major or concentration—as models for creating fully comprehensive curriculum that includes sustainability at its core.

### 4.5 Existing Framework

Before sustainability has been standardized in all design education domains, it will be up to the discretion of individual instructors to include the sustainability topics into their own classrooms. Bringing this knowledge to their students will be limited without educators themselves having resources to consult and a community of idea sharing to build upon.

There are few online resources or tools aimed at integrating sustainable systems thinking into communication design education. The following websites are reputable resources with robust communities and knowledge bases: Design Ignites Change (Design Ignites Change, n.d.); Adobe Education Exchange (Adobe Systems, Inc., n.d.); The Living Principles for Design (The Living Principles for Design, n.d.); and Creative for a Cause (Creative For A Cause, n.d.).

Design Ignites Change supports creative professionals and students who use design thinking to improve the lives of individuals and communities. The organization offers awards, scholarships, mentoring and workshops. While it does not specifically provide tools for educators, the website does have a substantial case study section
highlighting design projects that are focused on humanity, health, education, environment, community, politics and business. Design educators could draw upon these case studies for project ideas and inspiration.

Adobe Education Exchange is an online community where educators can browse ideas by subject, grade level, Adobe product, or resource type (assessment, curriculum, presentation, project, et cetera). Visitors to the website can connect with other registered educators, start discussions and participate in online professional development. The Adobe Education Exchange website provides resources for all levels—from early education through post-secondary—and covers all subjects from math to business. Although the site covers a broad scope, the navigation is simple and usable, allowing for educators to reference design project ideas quickly.

The Living Principles for Design offers a framework that is a catalyst for driving positive cultural change. The roadmap is a visual guide to designing sustainably while the site posts articles and news, provides information on events, talks, and links to other helpful websites.

“Creative for a Cause” (Creative For A Cause, n.d.) is a resource for communication design educators. The website lists role models, project highlights, publications, websites, places for funding opportunities, and academic links. There is an abundance of project ideas, articles, book suggestions and case studies on the previously listed websites for educators to utilize in their classrooms. Still, there remains a need for a starting point, a “how-to” guide for implementing sustainable systems thinking into existing curricula. For an educator who may want to start incorporating
these topics into his or her classroom, the topic itself can be overwhelming. An additional concern is the time it would take to modify an existing course or prepare for teaching a brand new course. Even for an educator who already discusses sustainability in the classroom, much time is required to gather new information, compile new reading material or case studies, and design new projects that all work together as a whole. For these reasons, a new and innovative tool is necessary.

Based on the analysis of existing resources in comparison to the concerns of educators as revealed in the interviews—and taking into consideration the responses of alumni working in the field of design—a comprehensive tool that offers robust tools and an active community is necessary. As a result, I designed and proposed Altus as an educational tool to assist design faculty in the integration of sustainable systems thinking in the classroom.
CHAPTER 5. DESIGN SOLUTION

5.1 Altus

Sustainable systems thinking should be part of communication designers’ standard workflow, therefore it must be taught throughout design education. While sustainability is being discussed more frequently within the field of communication design and among educators today, no guideline, standard or certification currently exist to aid in the implementation of these concepts into higher education curricula. The results of the alumni survey I conducted clearly illustrate communication design students’ strong desire to learn more about sustainability. There is little or no administrative support for inclusion of sustainability where it is not already part of a communication design program, and there are few quality online resources for guidance. It is left to individual instructors to decide how to best integrate this topic into their coursework.

To assist educators in bringing sustainable systems thinking into their classrooms, I have proposed a solution called Altus. Altus is a collaborative online repository and community for educators who wish to instruct students on the importance of adopting sustainability with a holistic approach to their work.
5.1.1 About Altus

In Latin, the word Altus means “grow” and “nourish,” which is the basic premise of sustainable systems thinking. The name was inspired by the name of my previous research, Re-nourish. It is my goal to incorporate the Altus project with Re-nourish to make the organization’s mission helpful to educators as well as practicing designers.

Including sustainable systems thinking pedagogy into communication design curricula requires instructors to be willing to adapt their coursework at various levels and degrees. There is a large discrepancy of knowledge in the area of sustainable design and a resistance from some educators to change their current ways of teaching. Therefore, it was imperative to develop a tool that would be engaging and available for all levels of familiarity to the topic. To design Altus, the topics and lessons need to be accessible and at a basic level for first year students and advanced for senior level students. For educators, the information and tools need to be scalable and flexible enough to be used individually and on an as-needed basis while also offering the ability to download an entire semester plan for those instructors interested in reworking their courses from the ground up. Providing a diverse range of modules to use in the classroom would not require educators to alter their current methods of teaching in order to use the tools. Alternatively, full curriculum downloads would be available for those educators who wish to incorporate the teaching tools in a more comprehensive manner. Providing scalable tools and resources allows faculty to choose their level of comfort that best fits into their methods of teaching and to approach change incrementally.
Altus is also designed to be a helpful community tool. Just like the concept that collaborative design creates a stronger product, an online community of educators would be able to create a stronger resource center. Registered educators may contribute content to the website for specific education levels or course types. Educators may upload project ideas, case studies of student work, presentations, and videos. Registered users are also encouraged to comment and rate other submissions. Additionally each registered Altus user can establish a profile, save favorite content, and view previous submissions through their personal account page.

Figure 11 Altus: site map
Figure 12 Altus: home page
Figure 13 Altus: Designing for Print section

Designing for Print

Whether it’s stationary posters, or postcards, more and more print designers are taking small steps along a new, more sustainable path. Environmental and social impact considerations are covered in this module, in conjunction with traditional design thinking development, skills and techniques.

Figure 14 Altus: Example of rollover
Designing for Print

Whether it’s stationary posters, or postcards, more and more print designers are taking small steps along a new, more sustainable path. Environmental and social impact considerations are increasingly influential in print design, and are often developed in conjunction with traditional design thinking development, skills and techniques.

Figure 15 Altus: Example of rollover 2

Figure 16 Altus: Project details
Figure 17 Altus: Project details 2

Figure 18 Altus: Share a Resource section
5.1.2 Testing

5.1.2.1 Altus project testing

To conduct the user testing study upon Altus, three communication design educators were invited to review the website designs. Petronio Bendito, Associate Professor of Visual Communications Design at Purdue University, was chosen for his work with digital color and experience with teaching interaction and web design courses. Jennifer Fuschel, Professor of Graphic Design at The New England School of Art and Design at Suffolk University was recruited for her extensive teaching experience in interaction design. Finally, Peter Fine, Assistant Professor of Art, Graphic Design at the University of Wyoming was chosen for his research on sustainable communication

Overall, the reception for Altus has been positive. At first glance, reviewers commented on the clean and simple design noting that the website was simply understandable. The color palette and layout were also mentioned as being warm and aesthetically pleasing. All of the reviewers agreed that the homepage should include the definition of sustainable design because many people understand only the environmental component of sustainability.

The homepage reads “What are you teaching this semester?” Professor Bendito raised the point that educators may be planning one or two semesters in advance, therefore he suggests changing the wording to be more general.

The project example on the interior page was a topic of concern. The highlighted project is an example of a Public Service Announcement poster design. The immediate reaction was that the users did not understand how this qualifies as a sustainable project. Professor Fuschel was satisfied with the explanation that public service announcements serve as messages to communities, helping to educate people and improve societies by raising awareness about important issues or motivating them to take action for a cause. Professor Bendito suggested that adding a materials use component to the project would help reinforce the message that society and environment are linked and where the elements from the quadruple bottom line overlap.
It was also suggested that the photograph on the homepage be replaced with a more iconographic image to combine classroom, design and sustainability.

The feedback on the Altus designs was very constructive. As this project is currently in its initial stage, implementing these changes would be very helpful moving forward.

5.1.2.2 Using sustainable systems methodology in the Purdue University Foundation curriculum

Teaching in the foundation design program at Purdue University has afforded me the excellent opportunity to implement my research in the classroom directly. Working with Foundations Coordinator and Professor Rick Paul, I was able to integrate sustainability lessons into the core curriculum of the Foundations program. The program consists of a sequence of two courses, 2 Dimensional Design I and 3 Dimensional Design II, and sees over 300 students—mostly freshmen—per academic year. These two courses are required for all students in Visual Communications Design, Industrial Design, Fashion Design, Interior Design, Photography, Studio Arts, and Electronic and Time-Based Art.

Beginning with the syllabus, I streamlined the document itself from nine pages to six by combining redundant information, reducing font sizes and spaces and moving secondary information to separate documents. That way if a student printed the syllabus, he or she will not also print out non-essential information such as a section on helpful tips.
Continuing my work on the syllabus, I wrote and included a section about sustainability as it relates to design and the classroom as well as other ways to save resources as students (See Appendix C).

As a starting point, this addition to the syllabus was meant to work as an introduction to sustainability at a very basic level, allowing students to become familiar with the idea that the topic permeates everything they do, make and consume.

Working with the existing problem sets for the two foundation courses, Professor Paul and I included sustainability elements into many of the assignments. I found that this transition happened very organically, without having to change the core tenet of the assignments very much. I was reminded of Professor Scott Boylston’s statements about incremental change and how teaching sustainability is not much different than what educators are already doing. This was a promising realization for the future of my research.

My favorite example of the foundation program curriculum changes came from the first assignment in the 2D course. The “Four Squares” problem is the student’s first introduction to composition, requiring them to use only three black squares and one color square to create a work on paper. The goal is to create a strong composition where the one color square does not overpower the three black squares. The original problem statement explains that the students use the standard course 12” x 12” black paper, and it was understood that they could use as much paper as they needed to solve the problem. One piece of colored paper to use for the fourth square was given to
each student randomly. The entire composition would then be glued down to a white piece of paper and matted.

The new sustainability component created a challenge for the students— to waste as little paper as possible while working together to minimize the project’s environmental impact. Now, the students were allowed to use only a single piece of black paper each. Instructed to cut the paper into squares resulting in zero scrap, the squares would be added to the community pile from which all students would borrow. The students were not allowed to alter the squares from the community pile in any way or cut any new squares. Once the final composition was determined, the student could then take the necessary squares needed to complete the final piece.

Because various size squares were needed to solve the problem effectively, the class could then decide how to distribute the paper cutting. The first option was to let the students delegate sizes together as a class. The second option was to let each table of students decide on the square sizes. The third option was to let each student cut his or her own paper individually without consulting anyone else.

During the first semester working with this new method my students chose the third option—to cut squares without consulting each other. This was particularly challenging for them because the size of the resulting squares were not varied enough to give them flexibility in their designs. Learning from this experience, the following semester I warned students against this route, but left it available as an option nonetheless. They heeded my advice and decided on square sizes table by table. The results were considerably stronger. All of the unused squares were collected at the
conclusion of the project so the students were able to see that even by using a single piece of paper each, there was a still a substantial amount of waste.

As Professor Paul explained, “when students aren’t aware they are learning something is usually when they’re learning the most.” In the example of the Four Squares assignment, not only were students learning about the importance of conservation, they were also learning about sharing limited resources, collaboration, relying on each other and providing for one another. In the context of design, students were forced to be creative with only what was available and illustrated that constraint breeds creativity.
Figure 20 Student examples of the Four Squares Project
Figure 21 The collective scrap paper from the Four Squares Project
CHAPTER 6. CONCLUSION

Through education we gain knowledge with which to overcome the cognitive and normative – and hence emotional – obstacles to understanding our global dilemma. Through education, sustainability can become firmly established within the existing value structure of societies while simultaneously helping that value structure evolve toward a more viable long-term approach to systemic global change (Edwards 2006, 23).

The belief that communication designers are skilled stylists concerned with only aesthetic ephemera only helps to stimulate desire for consumption and disposal. Although this perception is becoming increasingly irresponsible and unacceptable, it is unrealistic to strive for sustainability with the current methods of thinking and teaching.

The purpose of design education is shifting. Once established to prepare students in layout design, typography and advertising work, design education now prepares students for careers in such areas such as game design, interaction design and environmental design. Still shortsighted, this still traditional view places communication design sectors into neat containers. But communication design is much broader in scope—the boundaries of the profession overlap into many areas that are cross-disciplinary and trans-disciplinary in nature. Therefore design education must evolve to include a fundamental understanding of sustainable systems thinking principles, in theory and in application.
New design approaches that incorporate sustainable systems thinking and consider the Quadruple Bottom Line require that the work being done is exploratory and experimental, allowing for flexibility and change. A constructive way to approach design, proposed by Papanek, would be to create solutions that are long lasting but can evolve to meet the desire for aesthetic changes, modifications, or additions over time (Papanek 1985). Truly sustainable design practice will not be easily achieved by following a rigid and traditional format of teaching as this methodology tends to restrict outcomes. Modes of unique collaborations, brainstorming and play in the classroom could yield truly creative innovation. Educators should “encourage strategic thinking in design, where the designer’s responsibility goes beyond form and function, to value and viability” (The Designers Accord, n.d.).

Until sustainable systems thinking is integrated into all communication design curricula, design faculty, armed with the proper tools and resources, can begin in their own classrooms. It starts with small steps in design education; a faculty member playing a video about sustainability during class, or an instructor asking students to research paper impacts for a packaging project. Then, the discussion and exploration can blossom. Students can then start asking about other ways to design responsibly, taking these inquiries out into the world with them. They will realize they have a choice in how they work and what kind of work they do. Students will learn that they can bring this knowledge with them to their professional lives, where they can begin educating their own clients and employers about responsible communication design.
Communication design students cannot wait to be the change-makers of tomorrow; they need to act today. They can lead by example and set forth responsible design practices and aim to create positive change. The momentum will be contagious. They can break down the wall between sustainable design and design so there is no distinction between the two.
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Appendix A  Recent Design Alumni Questionnaire

Visual Communications Design alumni online survey on sustainability in education:

Welcome and thank you for visiting!

It's everywhere — "going green" is a hot topic these days. Unfortunately, it's still an uncommon practice in graphic design. However, sustainability goes beyond being environmentally-friendly. True sustainability means finding a balance between ecological, financial, social, and cultural well-being. One cannot affect a single area in this balance without affecting all other areas.

As a graduate student in Visual Communications Design at Purdue University, my MFA thesis project aims to add sustainability education into more graphic design programs. I am surveying recently graduated graphic design and visual communication students to find out where sustainability is needed in design higher education. The results of this survey will be used to provide better resources for integrating sustainability into graphic design education! Rest assured that no personal information is gathered from this survey.

(This research was approved and meets the criteria for exemption by the Purdue University Institutional Review Board (IRB). David Sigman, Principle Investigator.)
1. School name: _______________________

2. Year of graduation: _______________________

3. Years in profession: _______________________

4. Major:
   - Graphic Design
   - Visual Communications Design
   - Other: _______________________

5. Degree earned:
   - Associate
   - Bachelor of Arts
   - Bachelor of Fine Arts
   - Master of Arts
   - Master of Fine Arts
   - PhD
   - Certificate
   - Minor
   - Other: _______________________

6. Did your undergraduate degree provide you with information about sustainable design?

   _none   _very little      _some      _a good amount      _it was all about sustainability

7. What specific aspect(s) of sustainability did you learn about through your design program or courses?

   Choose all that apply:

   _environmental      _social*      _financial      _cultural*

   _none, I had to learn about sustainability on my own

   _none, sustainability wasn’t incorporated into my design education and it’s not my focus

   If you selected more than one option above, which area was focused on more than the others?

   _environmental      _social*      _financial      _cultural*

8. Would you have liked to learn more about sustainable design?

   o  Yes

   o  No

   o  Don’t care

   If yes, what specific aspect(s) of sustainability would you like to learn more about?

   Choose all that apply:

   _environmental      _social*      _financial      _cultural*
9. Were you assigned any projects involving sustainability during your course work?
   - Yes
   - No
   - Not sure
   
   If yes, how many projects were assigned that were focused on sustainability? ________
   
   If applicable, describe the project(s)______________________________________________

10. Did your design program offer specific courses on design sustainability?
    - Yes
    - No
    
    If yes, please list the course name(s)? ____________________
    
    What specific aspect of sustainability did the course(s) focus on?
    
    Choose all that apply:
    
    *environmental  *social*  *financial*  *cultural*
    
    If applicable, did you enroll in the course(s)?
    
    - Yes
    
    - No
11. Did your program uniformly integrate sustainable design methodology into its core curriculum? (for example, was sustainability discussed in the majority of your design courses and was sustainable design process encouraged throughout your academic career?)
   o Yes
   o No

Please elaborate: ____________________________________________________________

12. What type of environment do you currently work?
   o Design studio/agency
   o In-house design team
   o Freelance
   o Other _________
   o Not currently working in the design field

13. How much demand is there from clients for sustainable design for their projects?
   _none  _very little  _some  _a good amount  _most  _n/a

14. Is sustainability thinking incorporated into your current professional design work process?
   _none  _very little  _some  _a good amount  _most  _n/a
*(Social sustainability involves fair human and labor rights and corporate governance and healthy societies. The concept of social sustainability is to make choices considering the effect on other people in our ‘global community,’ and is related to the basic needs of happiness, health, safety, freedom, and dignity. Cultural sustainability refers to growth that preserves cultural heritage, traditions, cherished spaces, beliefs, art, language, dress or cuisine.)*

**SUBMIT**

Thank you for taking the survey! Your participation is much appreciated!

Feel free to email me with any questions or comments at yperullo@purdue.edu.

Many thanks!

Yvette
Appendix B  

Design Educator Questionnaire

Questions for Instructor telephone interview:

Introduction:

Sustainability is the balance between ecological, social, financial and cultural well-being. Graphic or Visual Communications Designers have a huge impact on that balance—we produce a lot of stuff—and in that process we directly affect this balance. Most times our current design process only focuses on the end result and the aesthetic, but fails to see its impacts up and down the supply chain and in our society. I am working on developing a method to incorporate sustainability thinking into core curriculum of Visual Communications Design education, in much the same way composition or color is integral to design.

I would like to hear your thoughts and opinions about the idea and what you would like to see. And with your consent, possibly quote you by name in my thesis report?

Where do you teach?

What is your title?

Years at current school:

Years teaching at the college level:

What courses are you currently teaching?

Does your current program require or suggest incorporating sustainability principles into your coursework?

Do you teach any courses where sustainability is the major theme? Does it focus on a specific aspect of sustainability (for example, only environmental or only ethical?)

If sustainability is not a major theme of your course(s), do you incorporate sustainability principles into any of your coursework? Do you focus on a specific aspect of sustainability (for example, only environmental or only ethical?) and how?

If so, which classes?

Is it a specific project only, or integrated into the course? Please elaborate.
If you don't already, are you interested in incorporating sustainability in your own courses?

Do you think this is an element that should be incorporated into core graphic design/VCD curriculum? Why or why not?

Would you be willing to adapt your courses to add sustainability thinking as a fundamental component of your classes?

Or would you rather see it as an optional addition or project-based?

If you decided to include sustainability pedagogy into your coursework, either project based or curriculum focused, what would you like to have as a resource? For example, a book, videos, e-book, website, etc.?

What do you see as obstacles in adding SST as a core thinking process in VCD?

Do you have anything else to add on the topic?
Appendix C  Syllabus Excerpt for Foundation Design I Course

**Sustainability**

As art and design students and future professionals, you will be asked to make a lot of stuff. The process of designing and making art can create great amounts of waste and use up precious resources, all of which have a large impact on the environment, society, culture and the economy. You are leaders and problem-solvers; therefore it is your responsibility to lead by example. Here are some ways to conserve and be responsible stewards of our environment:

- Only print when absolutely necessary. If you must print, print on the backside of scrap paper or print double-sided when using a fresh sheet.
- Place used paper in recycle bins.
- Buy only recycled paper (100% post-consumer waste is best); Save scrap paper for making sketchbooks.
- Print small images for color tests to save ink.
- Be mindful of your material use. Use less and use thoughtfully.
- Turn off lights if you are the last person to leave the room.

**Other ways to save resources and encourage sustainability:**

- Bring your own reusable water bottle or coffee mug to school.
- Pack food in reusable containers instead of plastic bags and disposable wrapping.
• Recycle everything you can. Items made from recycled material save resources, uses less water and energy, pollutes less, and keeps trash out of landfills.

• Consider purchasing from local businesses for your dorm/apartment or for school supplies. This helps the local economy and supports local business owners. Also consider buying used items, such as books and furniture.

_The Foundations Department strongly advocates for sustainability, therefore, no handouts, including this syllabus or problem sheets, will be printed for you._

It is YOUR RESPONSIBILITY to save a copy of any important documents where they will always be accessible. For example, the VPA drive (where all AD 105 documents are located) and your personal H drive may not be available to you at home or in your dorm, so plan accordingly. Save a copy to a USB flash drive or email to yourself. When necessary print a copy and remember to print on scrap or print double-sided.
Appendix D  IRB approvals
To: DAVID SIGMAN  
PAO

From: JEANNIE DICLEMENTI, Chair  
Social Science IRB

Date: 06/14/2012

Committee Action: Exemption Granted

IRB Action Date: 06/13/2012

IRB Protocol #: 1206012399

Study Title: Visual Communications Design alumni survey on sustainability in education

The Institutional Review Board (IRB) has reviewed the above-referenced study application and has determined that it meets the criteria for exemption under 45 CFR 46.101(b)(2).

If you wish to make changes to this study, please refer to our guidance “Minor Changes Not Requiring Review” located on our website at http://www.irb.purdue.edu/policies.php. For changes requiring IRB review, please submit an Amendment to Approved Study form or Personnel Amendment to Study form, whichever is applicable, located on the forms page of our website www.irb.purdue.edu/forms.php. Please contact our office if you have any questions.

Below is a list of best practices that we request you use when conducting your research. The list contains both general items as well as those specific to the different exemption categories.

**General**

- To recruit from Purdue University classrooms, the instructor and all others associated with conduct of the course (e.g., teaching assistants) must not be present during announcement of the research opportunity or any recruitment activity. This may be accomplished by announcing, in advance, that class will either start later than usual or end earlier than usual so this activity may occur. It should be emphasized that attendance at the announcement and recruitment are voluntary and the student’s attendance and enrollment decision will not be shared with those administering the course.

- If students earn extra credit towards their course grade through participation in a research project conducted by someone other than the course instructor(s), such as in the example above, the students participation should only be shared with the course instructor(s) at the end of the semester. Additionally, instructors who allow extra credit to be earned through participation in research must also provide an opportunity for students to earn comparable extra credit through a non-research activity requiring an amount of time and effort comparable to the research option.

- When conducting human subjects research at a non-Purdue college/university, investigators are urged to contact that institution’s IRB to determine requirements for conducting research at that institution.

- When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without
proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Category 1
• When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Categories 2 and 3
• Surveys and questionnaires should indicate
  ° only participants 18 years of age and over are eligible to participate in the research; and
  ° that participation is voluntary; and
  ° that any questions may be skipped; and
  ° include the investigator’s name and contact information.
• Investigators should explain to participants the amount of time required to participate. Additionally, they should explain to participants how confidentiality will be maintained or if it will not be maintained.
• When conducting focus group research, investigators cannot guarantee that all participants in the focus group will maintain the confidentiality of other group participants. The investigator should make participants aware of this potential for breach of confidentiality.
• When human subjects research will be conducted in schools or places of business, investigators must obtain written permission from an appropriate authority within the organization. If the written permission was not submitted with the study application at the time of IRB review (e.g., the school would not issue the letter without proof of IRB approval, etc.), the investigator must submit the written permission to the IRB prior to engaging in the research activities (e.g., recruitment, study procedures, etc.). This is an institutional requirement.

Category 6
• Surveys and data collection instruments should note that participation is voluntary.
• Surveys and data collection instruments should note that participants may skip any questions.
• When taste testing foods which are highly allergenic (e.g., peanuts, milk, etc.) investigators should disclose the possibility of a reaction to potential subjects.
To: DAVID SIGMAN  
PAO

From: JEANNIE DICLEMENTI, Chair  
Social Science IRB

Date: 06/19/2012

Committee Action: Exemption Granted

IRB Action Date: 06/19/2012

IRB Protocol #: 1206012400

Study Title: Visual Communications Design Educator Interview on Sustainability in Design Curricula

The Institutional Review Board (IRB) has reviewed the above-referenced study application and has determined that it meets the criteria for exemption under 45 CFR 46.101(b)(2).

If you wish to make changes to this study, please refer to our guidance “Minor Changes Not Requiring Review” located on our website at http://www.irb.purdue.edu/policies.php. For changes requiring IRB review, please submit an Amendment to Approved Study form or Personnel Amendment to Study form, whichever is applicable, located on the forms page of our website www.irb.purdue.edu/forms.php. Please contact our office if you have any questions.

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