# Morphing/Shape-Shifting Artifacts:
# Alternative Solutions for Promoting Sustainable Consumption and Corporate Social Responsibility

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## Introduction

This paper relays initial findings of a three-year interdisciplinary research project that is being initiated by the author of this paper (a $250,000 grant was received in July 2005 to expand on initial findings). It presents ideas for developing and instituting a sustainable design, production, supply, consumption and disposal model ('the product system'), and offers a condensed strategy and scenario that is intended to: fit into our current social and economic system; educate businesses and consumers about their social and ecological foot print (the harmful product systems that they are a part of); and on a corporate level, it aims to provide medium and large manufacturers and retail chains research findings that could enhance their future economic growth while avoiding many of the harmful social and ecological trends that they may be involved in or may currently be perpetuating.

Amongst many other important and interrelated objectives, this program of research is attempting to provide the international design and business community with a usable and profitable strategy for promoting corporate social and ecological responsibility. This paper outlines the thesis that it is possible for a relatively small group of memory-based materials to be used in a new generation of morphing/shape-shifting artifacts and environments (their *form* can be easily altered), to have a direct and measurable impact in improving the social and ecological commons—if used in a strategic and responsible manner. Redefining and significantly expanding *when* the life of the "originally cast" material *and* artifact is finished, and when the aesthetic appeal of that artifact has ended (or must be altered) is central to this project's investigations.

> **Approach and Research Team:** Interdisciplinary research with: the University of Alberta: Sociology (Dr. Rob Shields), Chemical Material Engineering (Dr. William McCaffrey, lifecycle analysis), Industrial Design (Principal Investigator: Prof. Tim Antoniuk); the University of Melbourne: Philosophy of aesthetics (Dr. John Armstrong); independent research agencies: Alberta Research Council: Solar/fuel cell research (Dr. Kaz Szymocha); corporations research, input and scenario building (Keilhauer, Palliser).

## The Central Issue:
## Unsustainable Lifestyles and Mass Consumption Patterns

To understand the severity and potential impact of the central issue being dealt with in this research project (locally, regionally, nationally, and internationally), it is prudent to recognize the powerful forces that have been causing and promoting mass consumption and unsustainable lifestyles patterns.

**The De-evolution of Corporations**

Although it is not feasible to develop and discuss all of the influences that corporations have had on society since their inception, one of the most significant effects that they have had is on the social and ecological commons is the slow but dramatic change in their level of corporate social responsibility. This change, and its relationship with this research project, centers around a gradual and profound shift towards being a purely economic contribution at the expense of, in many cases, the social and ecological commons.

In the United States, corporations were originally set up by associations of people who had agreed to perform a particular function (Chomsky); they were chartered by a State; had clear stipulations; and were considered to be a rare privilege. Tremendous *limitations* were put on these entities, such as: how long they could operate; the amount of capitalization; *what they made or did*; and of great relevance to this paper, how their shareholders were liable for their actions (Zepernick)—"In both law and the culture the corporation was considered a *subordinate* entity that was a gift from the people *in order to serve the public good.*" (Grossman) Although corporations of this era were prone to making questionable environmental decisions (especially given our current scientific knowledge), they stand in stark contrast to modern corporations in their broader social objectives, their long-term strategic contributions, and in who was allowed to form and run them.

Today, where virtually any person can form a corporation for virtually any reason, corporations do not have the same level of direct and indirect social, legal, or governmental restrictions (a direct result of the 14th Amendment). Of equal importance and concern to the social and environmental commons is the fact that our economic and political systems have not evolved to compensate for these highly economically biased changes. As testament to this, we have seen a significant decay in all of the world's ecological systems (Hawkins, et al., 4). Ezio Manzini, one of Europe's most imminent researchers in this field suggests that for a *sustainable society,* industrialized nations must to move towards a point where they are reliant on 10% of their current levels of resource consumption. And more recently, the UN recently stated that if (or when) China is to match Western levels of car ownership, it will need 650 million passenger vehicles. That would require, says the UN, more oil and metal than the world can supply. (Manthorpe, D4)

So, then, what can an industrial designer do about this massive shift in the goals and objectives of business and how mass society has adapted to a destructive pattern set by the short-term financially motivated corporate agenda (even India and China are adopting similar purchasing patterns)? The first step is to understand our current and emerging trends that are socially and ecologically disabling.

## Understanding and Altering Unsustainable Trends

Despite the quantity and complex nature of unsustainable trends and the interdependent roles that business, government, media and globalization play in its makeup, this paper addresses two of the most problematic agents: First, how to address businesses promotion of *destructive* levels of mass consumption; and second, how to contend with the corporate worlds continual reduction in the frequency, degree, and truthfulness of information that they shares with society—the *"corporate-consumer information and communication gap".* (Antoniuk, 24)

### Destructive Levels of Mass Consumption

There is no longer any reasonable level of debate as to which consumers and which countries are directly and indirectly responsible for causing declines in the Earth's living

systems. North Americans, for example, "waste or cause to be wasted nearly 1 million pounds of materials per person per year. This figure accounts for domestic consumption and production but does not account for waste generated overseas on our behalf." (Hawkins, et al., 52); and within the US manufacturing sector it is estimated that "there is a 90% average material waste factor during [the fabrication] of durable goods." (McDonough, Braungart, 27) In light of this on-going reality, embarking on a new generation of research that will enable people and companies with the greatest degrees of economic, social and political power to react appropriately may be prudent. Although 'action' may seem to be the difficult part of this reorientation and rebuilding process, the greatest challenge that designers and business people face is to develop a sound methodological approach for understanding *why* they (and their customers) have felt compelled to use this dysfunctional system. Once achieved, we must develop new strategies that will allow us to leapfrog and link a social and ecological agenda into the perceptions and images that businesses and consumers develop and portray. This needs to be the new competitive area.

**Defining Quality of Life**

Like the degrading environmental commons, there is little debate as to why people consume *nonessential* goods and services. Common sense holds that it is based on the assumption that it will enhance our quality-of-life in some manner (whether it is fleeting, in the short-term, or over an extended period of time). This simple answer, however, encourages a few other very important questions to be asked, such as: Where do consumers form their perceptions, desires, and aspiration? What are the origins of these feelings? How do these desires change with time? And, of tremendous importance to promoting sustainable lifestyles and consumption patters, is it realistic to expect consumers to stop consuming nonessential goods and services given our human history of consuming, collecting and display signals of wealth and prosperity?

To address the first question, of where people form their perceptions, aspirations and ideas that surround quality-of-life, one of school of thought that comes from the field of science and technology studies (STS) suggests that the business sector is a passive and reactionary entity that deals with consumers demands. Contesting this rational is the opposing school that contends that businesses are the singular agent who directly influences consumers with products, advertising, and savvy business strategies—"The presence of any one brand in the market will cause specific and predictable outcomes." (Woodhouse and Patton, 4)

This research project follows a more moderate approach in understanding how and why people consume and in understand the slow conscious and subconscious construction of *what it is to live a good life*. In STS, this approach would consider the *valence* of each agent and the complex psychological and perceptual interplay between agents (i.e. business, products and consumers). Woodhouse and Patton reference the principle of valence by stating that, "In other words, particular tools or technologies *tend* to be favored in certain situations, *tend* to perform in a predictable manner in these situations, and tend to *bend* other interactions to them. Valence tends to seek out or fit in with certain social norms and to ignore or disturb others." (5) This theory suggests that there are degrees with which people can be influenced (and influence), given a particular artifact, the market, its brand, etc. The ideas behind valence also begin to shed a reasonable degree of light on how desires and perceptions change over time and how design and business strategy should approach the goal of reorienting consumers towards more sustainable lifestyles, consumption patterns and in creating a higher level of corporate social responsibility. Assuming this is true, that neither consumers nor companies exclusively form our perceptions of *what it is to live a good*

*life,* we must understand the flow of information between these two groups and consider the ethical and epistemological implications.

**Ethics, Epistemology, and Flows of Information**

As an industrial designer, the creator of artifacts for mass consumption, a major part of our job is to understand the consumer; to design 'within the brand'; to entice a sense of wonder and desire (to encourage a purchase); and, to specify materials for our designed objects. Although this design process is simplified, it is clear that with 50 years of hindsight the research techniques that we currently use may come into question; our brand may be construed as an obvious promotion of excess and arrogance; we may become known as the poster child or company that created a constant flow of artifacts of questionable value (of any kind); and we may come to realize that we have specified ecologically toxic materials and used production and labor practices that benefited no one except our shareholders.

Hindsight is obviously an important design tool that allows us to learn from our mistakes, but it also suggests that a one's knowledgebase and their sense of ethics (and societies) slowly change overtime with *varying flows of information.* This inseparable relationship encourages a new set of questions to be asked: First, do all companies, their employees, and the public at large have the same knowledgebase? Is the flow of information pertaining to societal and ecological issues collected from current, accurate, and accessible sources? Will people seek out information if it is not accessible (intellectually or physically)? If there is any disparity between these information flows or between any of these people, what level is acceptable and what is not when we make a decision? Is the decision-making process ethical if we are aware that information is missing (or are withholding some information from others)? This series of highly condensed questions pose one further question which is central to this program of research: Are consumers constructing their daily purchasing decisions and are they building their definition of *what it is to live a good life* based on others—in large part, companies—definition, supply and control of information? Yes, it is believed so.

The following graph reflects the growing gap that is continually developing between consumers and companies (in part caused by globalism).
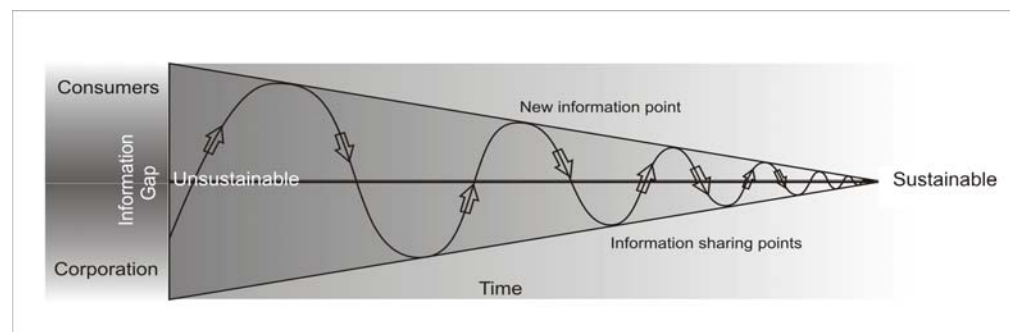


**The "Corporate-Consumer Information and Communication Gap"**

To understand this graph and how it applies to this program of research, consider the realities of most farming communities in North America 100 years ago. Families tended to live off the land; they bought and sold essentials and non-essentials locally; most of these items were made or grown locally; and the impact of these people and of their manufactured goods was quite locally based. As such, the flow of information between

these families and the world that they affected and were effected by was very local. This situation, which is rare in today's developed world, allowed for informed decision-making about community, prosperity (short-term and long-term), and the social and ecological commons. This example is *not* to make the argument that quality-of-life was necessarily better 100 years ago; it is simply to bring attention to the importance of the locality, immediacy and accuracy of information; it highlights the necessity of disseminating, distilling and distributing information and knowledge to a culturally and intellectually diverse group of people in a democratic and consistent manner.

Highlighted within the scenario that is included in this paper is the notion that the primary impact of the consumption system is designed into every product and service before it is ever bought or used. The UN notes that "of the (lifecycle) impacts from products, 60% to 80% are determined at the design stage." This responsibility, and opportunities that goes along with it, from a design, efficiency and communication perspective, suggests that the creators of the consumption system (designers and companies) should be able to make the most significant gains in increasing profits *and* in creating leaps in sustainable consumption patterns through: decreasing the information gap between corporations and consumers, increasing the frequency of communication, and in decreasing the and length of time with which the information is shared. This effort, in exposing truthful information to the buying public about social and ecological issue, will have a direct, measurable, and long-term effect of moving these issues, which have been largely ignored for the past century, to the top of peoples' assessment of *what it is to live a good life.*

Is it possible for companies to more effectively and dominantly promote the *'good'* part of *living a good life* with ethical, sustainable, and social sensitivity/awareness? Is it possible for 'attractive', which has traditionally been associated with pure aesthetics (and ultimately acquisition and purchase) to be overtly linked with the ethical and sustainable components of *living a good life*? At minimum, linking '*good'* (ethical) with '*attractive'* (aesthetic) is critical to developing mass sustainable consumption and lifestyle patterns.

## Understanding the Problems and Challenges of Implementing Change

Given the feasibility of implementing the aforementioned ideas, an additional set of complexities must be understood and eventually overcome before a profitable consumption strategy could be proposed and tested. These complexities are globalism and how corporations, the media and governments have become increasingly interdependent, potentially inseparable and, as such, indefinitely harmful to the commons.

### Globalization

Referencing the ideas behind *valence*, that no one agent is ever completely responsible (good or bad) for any given outcome, it is irrelevant to this program of research to take a singular position on the *overall* merits of globalism. Although the broader effects and implications of globalism are considered, primary focus has been placed on the overt and hidden attributes of *each element that makes up its hole*. This strategy, it is believed, will allow the research team to work with the overall system (versus rebuilding every elements) thereby leveraging our collective efforts of promoting sustainable consumption, lifestyles, and corporate social responsibility.

Although it is not possible to outline all of the positive and negative attributes of globalism given the length of this paper, it is clear that significant parts of it have directly contributed to widening the *product-consumer information and communication gap*, and as a result, had a negative impact the transfer of information from corporations to consumers. As such,

our research efforts are focused on: adapting to a large physical distance between the consumer and the design/product manufacturer company; in developing strategies that are able to react to the overwhelming effects of a potentially exhausting volume of information (for consumers to gain access to and to digest); and, in addressing the medium that information is transmitted to consumers through.

**The Bed That Corporations, the Media, and Governments Sleep In**
Despite the relatively clear *physical* separation that has continued existed between media, corporations and the government, a contrasting level of separation has developed over the past century in their actions, intentions and motivation (typically, most obvious during election times). The corporations of today have been able to exert tremendous influence and pressure (politically, socially, economically, and ecologically) across all levels of domestic and international societies in the form of political positions, economic/employment leveraging, and a subtle but profound influence on the shaping of societal ideals. This situation, it is proposed, has encouraged mass consumer society to follow a more corporate-based approach to living that is highly hedonistic and consumption based. 'The individual' is being placed above society.

Although it seems intuitive to fight the purveyors of this system the approach that this research project is taking is to use and reorient the influential social-shapers (business) to reorient mass consumer societies notion of *how* they should live, *what* a 'good life' is, and what information is relevant to promoting and sustaining it.

**The Service-Based Economy, Consumer Passivity, and Feedback Loops**

Over the last couple of decades, a number of researchers investigating future trends and sustainable consumption have become proponents of moving aggressively towards service-based economies. The economic and ecological promise of this system relates to the feasibility of shifting consumer desire away from ownership of goods towards the *use of* artifacts. Related to this far-reaching ecological benefit, proponents of this system highlight its long economic history and evolution over the past century. It has been functioning, in place and will continue to provide designers and companies with a legitimate strategy that would allow decreased product sales to be replaced with increased service-based income.

Although this system continues to show signals of its original pledge a set of highly disabling trends has begun to emerge. Two of the most dominant ones that are dealt with in this research project are: That companies must increase the flow of socially and ecologically relevant information about their product systems; and, that they must become responsible for the entire lifecycle of their goods and services. If ignored, consumer passivity will rises as a result of 'being served' (consumers feel no responsibility when using 'trivial' goods or service), which, in large part, results from: increasing the physical distance between the consumer and the production, supply and disposal of the artifact; and, shrinking the perceptual and ethical responsibility of maintaining and participating in a healthy ecological and social environment. Either way, a feedback loop develops and will shape societal consumption patterns and their definition of *what it is to live a good life.*

## Ideas for Implementing Change

Considering the power of modern corporations and their strong links with media and political appointees (those in government), this research project aims to shape, at what every level is reasonably possible, future corporate strategies in a more social and ecological direction. These efforts, it is important to note, are not meant to be exclusionary—this project recognizes the importance and necessity of grass-roots consumer movements and how they are critical to social

shaping. This said, we are highly focused on working with a relatively small section of the corporate and consumer world whose 'members' are considered to be influential 'cool-shapers'. We will be dealing with major portions of the technology and luxury markets because of their consistent ability to exert a tremendous trickle-down influence on mass consumer society and future purchasing/lifestyle patterns. The following ideas will be researched and tested:

…That many artifacts and interior environments could become ecologically sustainable if the time with which anyone continues to use the original material could be significantly extended.

…That using *memory materials* in a strategic manner could allow this to occur.

…That *memory materials* have the ability to be 'reused' and 'reshaped' an endless number of times (relative to general shape and rough size of the originally 'cast' object).

…That physically altering objects will be made possible through: subtle alterations by the end-user; when manufacturing and retail chains become integrated into *a new section* of the manufacturing chain (see scenario below).

…That *rematerializing* first generation objects into <u>new</u> 2nd, 3rd, and so on, generation artifacts will allow a closed-loop system to develop (retail/distribution stores are replaced with *object regeneration,* performance up-grade, material reclamation, and *consumer information centers*).

…That an object's collectability, novelty, and usability could be enhanced with *memory materials*.

…These design and business efforts will, in turn, begin to alter the public, design and business industries' perception of: *when* the life of a product is over; *when* a material's lifecycle is finished; that desiring, purchasing and using 'the new' *does not* have to equate with disposal of 'the old'; and, that 'living good' and 'being good' can become linked with socially and environmentally constructive artifacts.

… Adopting this strategy will allow businesses to:
- Reshape consumers' perception of *what it is to live a good life.*
- Shift people's perception of desirable hedonistic lifestyles towards a feeling that they have also done something that is socially and ecologically responsible.
- Offer consumers a new kind of 'designer good' that is able to shape-shift into their latest form (with little energy inputs).
- Realize that short-term economic gain can be achieved with a high level of corporate social and environmental responsibility.
- Recognize a new way to share information at a level that is understandable and accessible to the public - reducing the corporate-consumer information and communication gap.
- Find a sustainable business strategy that is not radically different than their current one.

## Direction of Current Scenario

The condensed scenario that is presented below proposes a scenario of how materials, artifacts, and services could, and perhaps should, be able to change form or intended context of use to significantly extend the material and product life cycles of goods and services (thus reducing eco-impact). At the manufacturing, supply, consumption and disposal level, this scenario suggests that certain retailers should become more deeply involved in the manufacturing, supply, re-generation and communication lifecycles of products and services (partially to bring back an economically sustainable manufacturing base to local areas). Traditional retail 'distribution' stores could become slowly replaced with object *regeneration service centers*, performance upgrade

and material reclamation centers that educate the public and the corporate world … allow them to see a larger part of their company, their products, and their footprint.



## The Scenario

The images shown on the previous page feature two different lamps that were made for the same customer out of the same piece of semi-transparent plastic (literally) called Memory Plastic. The item on the right is an accent table lamp that was purchased by a customer, named Gene, for his apartment. After one year of owning this lamp (designed by *ANT I.D.*) he moved in with his girlfriend into her new loft. Amanda, deeply in love with Gene and the style of his new lamp strongly suggested they use her current lamp for their new bedroom and take a quick trip down to the new *"regeneration"* service center (that was recently set up on the west side of town) to get his small lamp *re-materialized* into a much larger hanging lamp (shown on the left). This new lamp would be placed above, and would fit perfectly with, their newly *rematerialized* dining table.

The results of this new service, and of the somewhat magical material that is now being used on a large commercial scale, enabled this fashion conscious couple to transform the outward appearance and function of their lamp to better suit their changing needs, wants and desires. Economically, the only reason that they were able to afford the trendy new version of this lamp was that 50% of the cost had already paid when purchasing the smaller lamp a year earlier. It allowed them to quickly and economically adapt to their new life together, keep up with trends (which is very important to them), and from a sustainable perspective, dramatically reduce the amount of material, energy, and overall waste flow that they are responsible for generating. In addition to these far reaching benefits, a higher more consistent level of profits and return-on-investment has been made available to local retail and manufacturing industries through incorporating them into *a new kind* of production and supply system. At these ecoefficient service centers (that are set up in every city that these objects are distributed in) a new generation of consumers is able to 'upgrade' their current products with the latest performance parts, retrofit them with the most current energy saving technologies, and endlessly *rematerialize* them into the latest designer versions.

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