An Academic Review and Critique of the following text:

McDonough, William. (2002). Cradle to Cradle: Remaking the Way We Make Things. New York: North Point Press.

Introduction

Cradle to Cradle: Remaking the Way We Make Things was written by William McDonough and Michael Braungart, an American architect and German chemist, respectively, who both have very significant views on sustainability and the way humans utilize the Earth. McDonough serves as the founder of his architecture firm, William McDonough + Partners, focusing his work on creating sustainable design within architecture. He is also the co-founder of McDonough Braungart Design Chemistry alongside the co-author, Michael Braungart. This chemical industry company seeks out ways to alter current industrial practices and encourages looking at all aspects of a product's life cycle in order to fully understand the impact it may have. Both individuals have won many awards for their work in environmental sustainability and throughout the book, they explain their rationale behind the practice of "being green" and describe how to implement such. In this book, they look to inform readers on the benefit of good design paired with green design how closely these aspects are connected in order to not only to avoid a negative environmental impact, but to create a positive one.

Summary

To better explain the overall topic of sustainable environmental design and responsibility, the authors separate the book into larger segments that cover the overarching elements of their manifesto. They separate the book into six sections, each one focusing on a different aspect of

what they believe to be true about the use of raw materials and generated products and relate it to the natural environment and what effect human interaction has on the natural ecosystem.

Excluded from the six overall segments and starting out the piece, the Introduction serves an important part in providing some context toward the authors and begins to show the reader how and where the thinking behind the ideas presented in the book come from. A major argument is first presented here that the authors use throughout the book: the idea of downcycling. They write, "…you deliberately chose [a carpet] made from recycled polyester soda bottles. Perhaps it would be more accurate to say *downcycled.* Good intentions aside, your rug is made of things that were never designed with this further use in mind…" (McDonough, 2002, p. 4). Here in the introduction, they begin to set up their ideas and explain the main points that will be present throughout the book. After presenting the term for the first time, they go on to describe what it means explaining that this process, not related to the true meaning of recycling, wastes energy and resources turning something into another product that will eventually have to be repurposed again, but never be able to return to a natural form that benefits the environment.

Moving into the first true section of the book, the authors present "A Question of Design" and further delve into the idea of downcycling as a practice that is commonly seen as a positive thing to do. However, as they explain, "…[items] are the ultimate products of an industrial system that is designed on a linear, one-way *cradle-to-grave* model. Resources are extracted, shaped into products, sold, and eventually disposed of in a "grave" of some kind, usually a landfill or incinerator" (McDonough, 2002, p. 26). They go on to state that, "according to some accounts more than 90 percent of materials extracted to make durable goods in the United States become waste almost immediately" (McDonough, 2002, p. 27) This is just the first of many

instances that they encourage a "cradle-to-cradle" model opposing the current practice of "cradle-to-grave." They begin to relate this to the field of architecture and development calling out the mistakes of said industry that began in the Industrial Revolution. During the International Style movement, the authors explain that "…they wanted to globally replace unsanitary and inequitable housing—fancy, ornate places for the rich; ugly, unhealthy places for the poor—with clean, minimalist, affordable buildings unencumbered by distinctions of wealth or class" (McDonough, 2002, p. 28). Although a seemingly noble cause to prevent the classification of society through architecture and design, McDonough and Braungart show that this caused the unification of poor design and building techniques from an environmental and sustainability standpoint. Through the use of "…large sheets of glass, steel, and concrete, and cheap transportation powered by fossil fuels, gave engineers and architects the tools for realizing this style anywhere in the world" (McDonough, 2002, p. 28). The authors propose the *question of design* in where does the ability to design cheaply and uniformly become more important than the sacrifice for the care and protection of the environment.

In the next section of the book, McDonough and Braungart go into details of describing the current efforts of reducing, reusing, and "recycling," and explain that doesn't really solve any problem at all. With the chapter titled: "Why being 'less bad' is no good," the authors present another key point to their theories in terms of the rate at which we waste our natural resources and in turn harm the natural environment. "Recycling is an aspirin, alleviating a rather large collective hangover…overconsumption.' Or again, 'The best way to reduce any environmental impact is not to recycle more, but to produce and dispose of less" (McDonough, 2002, p. 50). Simply slowing the acceleration of waste does not solve the overall problem of waste. They go on to explain that the process of recycling can be significantly wasteful and harmful at the same

time. “Just because a material is recycled does not automatically make it ecologically benign, especially if it was not specifically designed for recycling.” The continue, “Blindly adopting superficial environmental approaches without fully understanding their effects can be no better—and perhaps even worse—than doing nothing” (McDonough, 2002, p. 59). They hold that while intentions are good, simply bandaging a wound that needs to be stitched does not solve the problem, showing that it is not very beneficial at this point to just be “less bad.”

In the third, short chapter of the book, the authors present the idea of “eco-effectiveness” and explain that products should be designed in a way that they are able to be cycled into other things with ease when their initial use is done. They also maintain the relationship to nature and that everything should be designed with the natural environment in mind through the use of a metaphor of a cherry tree which produces more than necessary, however does it in a way to not harm the environment around it. They go on to relate this topic to architecture by presenting an example of an eco-efficient, and in turn energy-efficient, building. Describing the energy saving aspects of the construction from large, ventilating windows that let in fresh air at night to green, grass roofs that insulate the building throughout the day, the authors present their “cherry tree” of a building that serves its purpose of providing for its users, but does not have the environmental impact of most buildings. They proceed to relate it to the economy of sustainability, stating, “during construction, certain elements of the…building did cost a little more. For example, windows that open are more expensive than windows that do not. But the nighttime cooling strategy cuts down on the need for air-conditioning during the day…daylight diminishes the need for fluorescent light… [and] fresh air makes the indoor spaces more pleasurable.” They continue, explaining that while these elements have a higher upfront cost, they also have “…an effect with economic as well as aesthetic consequences” (McDonough, 2002, p. 74).

Moving into the fourth chapter, the authors use nature yet again to explain the relationship that human interaction should have on the environment. They explain that in nature, "waste equals food," describing the cyclical route that materials in nature take, never creating waste, but only "food" for the next user of said material. "This cyclical, cradle-to-cradle biological system has nourished a planet of thriving, diverse abundance for millions of years," showing that growth was good for the environment because, "it meant more trees, more species, greater diversity, and more complex, resilient ecosystems" (McDonough, 2002, p. 92). They go on to explain that with the introduction of the Industrial Revolution, there was a major disruption in this seemingly perfect system. Through the extreme amounts of processing of natural materials, humans created things that were not safe to return to the Earth, in turn putting an end to the cycle and creating a need for a way to dispose of waste which before was taken care of. Throughout this chapter they highlight different examples of projects that take the aspect of waste into account, making sure that there is a determined plan when the products life is over.

In the final two chapters of the book, McDonough and Braungart begin to present the recommendations of their manifesto by providing principles that humans should live by in order to prevent further damage and help the damage that has already been done. The fifth chapter continues to build on the example of nature, and more specifically the diversity present within it. They explain that not every building is made for every locale and that it is much better to design for the specific place as to avoid over-designing and in turn, becoming wasteful and boring. The authors state that buildings of today, "…present a bland, uniform front rise in communities where structures were for decades, even centuries, beautiful and culturally distinct" (McDonough, 2002, p. 118). Not only does today's building industry lead to non-unique, bland structures, it also creates a problem from sustainability standpoint. Not using local materials and

using a cold-weather design in a warm weather climate all to achieve a desired aesthetic is irresponsible and wasteful in their eyes.

Finally, in the last chapter of the book, the major focus is to present the "Five Steps to Eco-Effectiveness," explaining that, "…in most cases change begins with a specific product, system, or problem and, driven by a commitment to putting eco-effective principles into action, grows incrementally" (McDonough, 2002, p. 165). They go on to explain their five principles including: get "free of" known culprits, follow informed personal preferences, creating a "passive positive" list, activate the positive list, and reinvent. In short, we should eliminate materials that are "known" to cause problems, design for like you were designing for yourself, list the benefits and follow them, and finally redesign and rethink current customs in order to improve the current state. They go on to provide their five guiding principles to live by when attempting to redesign, essentially focusing on stating the plan, restore what can be restored, redesign and reinvent further, anticipate struggles, and finally be in it for the long run. By living by the guidelines, they imagine that humans can have not only a diminished effect on the environment, but a positive one by becoming mindful of our influence and doing everything we can to restore and enhance the natural environment.

Analysis

While it is generally understood that a major goal of today's society is to have the least negative environmental impact as possible, the major theme throughout the book is that of having not only decreased negative effects, but an increase of the positive. As it has been for the past couple centuries, humans have had an extreme negative impact on the natural environment, seemingly without care. From one standpoint the authors explain, "…many products are designed with 'built-in obsolescence,' to last only for a certain period of time, to allow—to

encourage—the customer to get rid of the thing and buy a new model" (McDonough, 2002, p. 27). This attitude of only attaining a heightened economic value of a product or building is the very thing the authors are attempting to advise against. They subtly encourage a more personal responsibility to protection and enhancement of the natural environment by providing many examples relating nature to the built, industrial environment.

On the topic of recycling, the authors take a large portion of the text to explain why current practices are, although seemingly helpful, not at all what should be done. "Downcycling has [many disadvantages.] It can be more expensive for businesses, partly because it tries to force materials into more lifetimes than they were originally designed for, a complicated and messy conversion and one that itself expends energy and resources" (McDonough, 2002, p. 59). They explain that while downcycling does slow the acceleration of damage done to the natural environment, it does not reverse it. Through the use of many examples, the authors have shown that the current recycling process must be *reinvented* in order to truly do any good.

Architecture and development in the field, while aesthetics are important, is moving toward a more sustainable design methodology, improving not only visually and functionally, but from an environmental standpoint as well. Citing the example of the International Style, today's architects are moving away from a methodology that is practices because, "it is easy and cheap and makes architecture uniform in many settings" (McDonough, 2002, p. 29). By doing so and following the proposed guidelines, the overall value of a project is greatly enhanced in multiple ways, providing benefits for many levels of people from investors to users.

Moving to the idea of eco-effectiveness, the authors are clear to suggest a redesign of how products and buildings are currently created. How raw materials, new products, and waste are handled are all to be reevaluated according to their philosophy. By citing examples of how

buildings can become more environmentally friendly, the show that change, while not readily encouraged, can be relatively simple and extremely beneficial. In the same vein, the rationale behind the use of waste, and moreover the *design* of waste is an interesting concept. They believe that through design, society can simultaneously enhance both the built and natural environment. By creating something that is intended for a heightened final use from the beginning, waste does not become waste, but rather a product for a different user.

Finally, in the closing out the book, McDonough and Braungart lay out their suggested guidelines on how to go about changing the current state of the use of materials as they relate to the built environment and designed products. Although they have very opinionated views on how the world is operating, they are very gentle and encouraging in their proposal. Instead of laying harsh blame, the authors take a more cheerful approach to address the issues at hand and speak on the specific things that we, as society, can all contribute to aid in the protection and revitalization of the Earth.

Response

In reviewing this piece, McDonough and Braungart demonstrate their support of employing design techniques that are considered "good" that encourage multiple aspects of eco-efficient development leading to a wide array of benefits. Drawing from their statements, it is clear that certain aspects of the industrial cycle today are not representing the human race well in the overall concert of the Earth. Sustainable design, incorporating all the important elements in a cohesive way and making a big deal of such, is the only way that we will be able to sustain ourselves and the environment.

It is important – living and producing based on the guidelines they set forth – that development follows suit behind these principles, heading in a more eco-efficient design based

rather than production based system of building. Although many have an antiquated view on industry, focusing solely on monetary value alone, McDonough and Braungart demonstrate how employing heighted design practices can not only have a positive social impact, but also decrease costs from an economic standpoint and positively alter the natural environment.

Conclusions

The overarching concept that sustainable design influences good economics and good societal interaction with the environment is very clear throughout Cradle to Cradle. In this piece, the authors segment this topic into easy to digest sections that look to explain the different aspects that lead toward their beliefs on the topic. Citing examples of multiple projects around the world, they provide a large range of precedents to be used to apply the principles they lay out.

Today's architects and developers should use these "new" techniques and guidelines that seem to follow their prescription when creating spaces for future development. Incorporating all these important elements and making them a vital part of design can bring a great improvement not only for the users of designed products but the surrounding ecosystem, adding economic, social, and positive environmental value, while instilling good design principles in the users' everyday lives.

References

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