The Need for Socially Responsible Design in a Dynamic Society

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Abstract
In the light of social change diversification, the importance of shaping connections between people and products for more resilient ways of life is growing. The purpose of this paper is to uncover the importance of responsibility and self-cultivation of designers in social change diversification. For this aim, this paper reflects on a case study of the design of Chinese dockless bike-sharing systems, including Mobike and OFO. The case of the dockless bike-sharing systems represents fast-paced changes in the service design industry which necessitates quick, constant, and holistic design input. The paper reports on how the case study is described in literature, and what learnings can be drawn from this. The study highlights the important role of design for society and shows approaches of designers towards solving real-world problems. Self-cultivation of designers seems to be an important factor in reinventing proximity between social responsibilities, sustainable considerations, and market competition in design.

Keywords: Multiculturalism, Social Responsibility, Ethics

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Introduction

Designers are able to affect social change through service design. In this instance, social change refers to changes that alter the established societal institutions. For example, the increase of gender equality is one example of social change. Social changes are not always positive ones. Negative social changes such as the increase of women in criminal activities could also be attained which would be a great loss for society (Pattanaik & Mishra, 2001). Social change can be influenced and brought about by the population. As part of society, it stands to reason that designers can kickstart social change. This may apply most clearly to service design, which is where designers optimize an experience between users and service providers (Clack & Ellison, 2019). As the Interaction Design Foundation describes it, "When you have two coffee shops right next to each other, and each sells the exact same coffee at the exact same price, service design is what makes you walk into one and not the other ("Service Design")." Designers are agents of change who, through service design, influence the minds and alter the behavior of people (Dam & Siang, 2020). This aspect can also be brought to social change where it could be used to solve some of the problems society currently faces.

There is significant opportunity now for designers to have a positive impact on society for a few reasons. First, social media makes it easy for designers to follow social trends and take note of such opportunities, as well as learn what issues are current in the public's eye. Similarly, designers can easily share their work, and both involve users in earlier stages of design and work to make sure their designs are used in the intended manner. However, designers need to be mindful of the unintended consequences of their work. As this paper will show, a project can start with the best of intentions and still result in a net negative effect on society. The current study examines such case study, that of a public bike sharing program in Shanghai, China. This is a program that, on paper, would reduce people's dependence on vehicles, therefore reducing pollution and easing traffic. Combined with the city's public transportation network, these programs would enable most of the local population to easily travel around the city and reach their destination without need for a vehicle. In addition to the environmental benefit, users would be expected to get more exercise, increasing fitness. The benefits of such programs would seem to make them an excellent design and social program, but instead the unintended and unforeseen consequences of the programs provide a cautionary tale to designers looking to implement social change through service design.

Then, the current research will explore two research questions, those being:

Research Question 1:

Can designers positively influence social change?

Research Question 2:

Do designers need to consider unintended consequences related to their designs?

There has been other research into these questions. For example, Yeager et al conducted a social science experiment across multiple schools in the US and Canada from different ethnic backgrounds and of different genders (Yeager et al, 2016). The purpose of the experiment was to decipher how successful psychological interventions could be designed to help students who were going into high school. The results demonstrate that the use of intentional design, yielded better outcomes for students and improved their academic performance. One

important limitation of the study was that the results showed that long-term results were weaker compared to short-term results. Another limitation is that not all the factors that may contribute to the results were factored in, such as different teachers and learning styles.

In another case related to graphic design, specifically print design, chemicals are used in the design process. Graphic design has been identified as a major source of pollution which also includes visual pollution. In the book Visual Pollution, author Adriana Portella (2014) delves into how various components of graphic design affect the quality of the environment in which people live. The conclusion drawn from her research is that graphic design does indeed affect peoples' environment and thus affects their lives. Therefore, to avoid its negative effects, interventions need to be put in place.

These works demonstrate how design can impact the daily lives of people in society and illustrate the importance of considering the unintended consequences that may result from a designer's work. It is important that designers begin to consider these factors in their work, so they do not inadvertently make a situation worse. This is the basis for the concept of designer self-cultivation, which refers to the need for a designer to improve themselves and will be explored further in this paper.

Methods

This study aims to contribute to an answer on how designers can contribute to positive social change, referring to introducing a beneficial factor to a problem faced by society, such as climate change, inequality, or crime. This study analyses a design case that aims to contribute to social change related to climate change actions. For this research, both qualitative and quantitative data were examined. The criterion used to determine validity and reliability is peer-reviewed sources and the use of news articles. News articles can provide real-world information, while peer-reviewed sources provide credible data. Numerical data is used for the purpose of acquiring information about the resources present in the situation while qualitative data provides information concerning the perception of various members of society.

These methodological choices are justified by the fact that the research requires both numerical and interaction-based data. The information used in this research is both research conducted directly by the author and interpretation of works created by others. This was necessary as the information used in this paper is designed to analyze a current problem society faces and one example of a designed intervention, while at the same time using credible methods.

Research Data

It is imperative to review the data before attempting to answer the research questions. Figure 1 shows that bike-sharing systems have rapidly expanded in many regions of China as a result of their perceived benefits. Using the bike service, people would be able to bypass traffic, which should save a great deal of time. Additionally, people could save money that would otherwise be used to facilitate other modes of transportation. Technological advancements have also made it possible for people to access and operate bikes via their mobile phones. In addition, the rapid growth of the bike-sharing business in China has also been attributed to an increase in on-demand products such as transportation and food delivery.
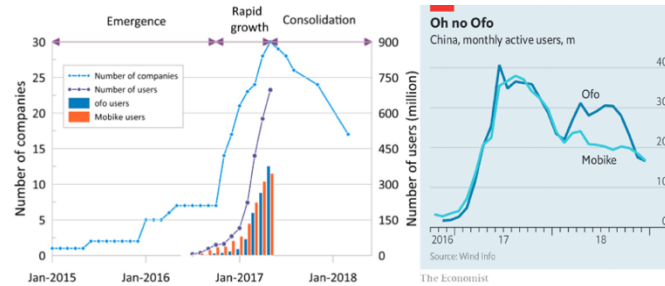
Figure 1: Bike Share Growth Users in Shanghai 2016 – 2019

Based on the data graph (Figure 1) above from "Rethinking the Utility of Public Bicycles: The Development and Challenges of Station-Less Bike Sharing in China (Wang et al, 2019)," after the rapid expansion between 2016 and 2017, there was a rapid decline in monthly users. Approximately 675 million people used the service in the first half of 2017, which is nearly 400 million people fewer than in the previous half of the year. As a result, there was a reduction in demand for bike-sharing services. The design of the system allowed users to park anywhere, leading to poor parking conditions, as well as a high rate of lost or damaged bikes. Due to a lack of early attention by the designers, there were no measures in place to address these difficulties.

According to this data chart (Figure 2) from "Mobile bicycle-sharing hits China, boom reinvigorates manufacturers (Yao, 2017)," user preference for modes of transportation changed before and after the introduction of the bike-sharing design system. It can be seen from the chart that the use of public transportation as well as walking decreased by 4% and 6%, respectively, after the introduction of the bike-sharing system. As opposed to this, the use of bicycles and cars increased by 26% and 2%, respectively. Considering that other modes of transportation have declined by 10%, the increase in bicycle usage is uncharacteristic. This indicates that people embraced shared bikes over other modes of transportation available to them (Lyu et al, 2021).
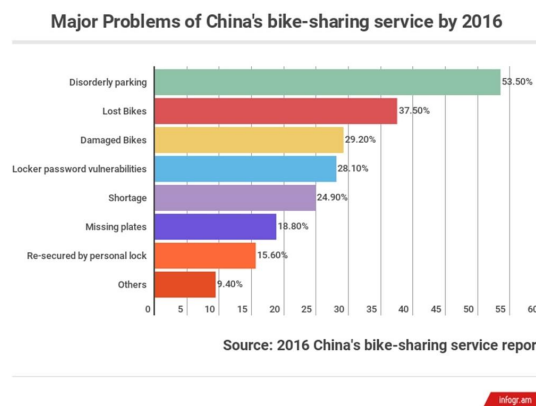

Figure 2: Problems identified with bike sharing programs

As shown in (Figure 3) below, public transportation and cars continue to be the preferred means of transportation for longer distances (Sun, 2018). Walking may have decreased as a result of the ease of access and low cost of using the system. There is a reduced likelihood of users walking when cycling would reduce their travel time.
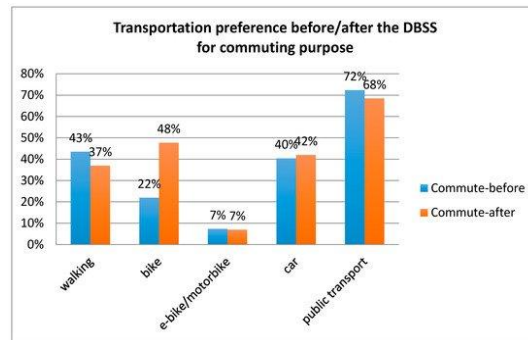
Figure 3: User preference in methods of transportation

Based on the data presented so far, these results indicate that bicycles are preferred over other modes of transportation by the public. The majority of individuals with adequate resources preferred to use their own means of transportation over the bike-sharing system. The use of bicycles initially increased rapidly, but then declined rapidly. The bike system was plagued by multiple design problems such as protection and parking. According to the data, designers are able to positively influence social change through service design, in response to the first research question. As demonstrated by the rapid growth in users of the bike system, the bike system was capable of bringing about social change.

In response to the second research question, the findings also support the conclusion that designers should consider unintended consequences when designing. Neither the creators nor the designers of the bike sharing system anticipated or prepared for the problems they would encounter. As a result, their design was unsuccessful, as demonstrated by the fact that many users stopped using the bike system. The size of the fleets of bike sharing companies is one of the unforeseeable problems. Unfortunately, the bike-sharing design system may have many more problems that have yet to be identified.

Resources, both material and financial, have been invested in the bike-sharing system, but rather than addressing the problems at hand, bike-sharing companies contribute to the proliferation of those products. Ofo and Mobike, two leading Chinese bike-sharing companies, have failed due to a lack of problem resolution (Zhang et al, 2015). There is a possibility that the bike-sharing sector can be saved if designers improve themselves and continuously research ways to solve the problems identified in their designs. By approaching projects critically, considering a bigger picture, and acknowledging their responsibilities to society, designers can solve the bike-sharing problem. As a result, they will have contributed to social change and improved the craft of design in a constructive manner.

Summary and Discussion of the Research

To summarize the research described above, designers influence society in a great way, such as in fashion and aesthetics. They exert a great influence on how people perceive things and how change comes about. This power comes with social responsibility. However, designers also face a lot of challenges, such as competition with each other, especially when they work in different companies, which dilute their social responsibility and instead direct them towards profits, novelties, and other vices that show their competitiveness. Companies are usually profit-oriented and frequently compete with similar companies in the production of products that will generate more returns than their competitors.

If designers knew the importance of the role they play and self-cultivation, there may be a chance that a better outcome could be achieved, which would improve the lives of a lot of people (Vallor, 2016). The focus of this research paper is to show the importance of the role of designers in promoting social change with the aim of boosting development of design as a discipline. In addition, we explore the unintended consequences of design to demonstrate the importance of considering the full impact a design will have on society and trying to build in mitigating features into the original design. Based on the concepts outlined above, specific subtopics were identified for discussion. These subtopics were selected with the goal of focusing the research and are as follows:

- Continuous Improvement of Designer Self-Cultivation

Self-cultivation refers to the process by which individuals improve and develop themselves through personal efforts. This is one method individuals may use to improve their morality (Peters, 2020). Improving oneself may refer not only to skill but to the products created or released by the designers. Interactive and graphic designers come up with multiple products which sometimes present unethical or immoral ideas. For example, marketing or technology that promotes male or racial superiority. These products may bring in a lot of profit and in themselves be extremely innovative and useful. However, they were designed to reinforce inequity and oppress groups in society. Designers have a responsibility to not continue with such designs.

A good example of designer self-cultivation is the design of the products generated through Value-Sensitive Design, which is design that considers societal values as part of the design process (Gerdes, 2022). This design method challenges designers to create products that factor in morals and values important to society (Manders-Huits, 2011). Through design methodology like Value-Sensitive Design, designers can self-cultivate into individuals who choose the welfare of society over material gain.

While self-cultivation of designers prioritizes the welfare of society over economic gains, it also attracts more individuals to particular products. This means that in the end, self-cultivation does not just improve the designer as an individual, but also attracts people to products that were made with the welfare of society in mind. As a result, it can also be seen as a method useful for promoting and marketing the products created by the designers.
For example, in China, designers came up with a project where bicycles could be shared by many people through technology, as discussed in this article. The designers in charge of the project concluded that the use of dockless bike-sharing would "…decrease the average trip time of passengers…increase the efficiency of an urban public transport network…[and] effectively improve the uneven level of traffic flow spatial distribution of an urban public transport (Sun, 2018)." In short, bike-sharing would reduce traffic congestion which would save a lot of money, time, and resources. The bike project was designed to alleviate problems faced by society as it proved to be a better, cheaper, and less time-consuming way of transportation, it attracted a lot of people i.e., customers and investors (Lipton, 2017). As a result, it became a profitable venture to earn money.

- Clarify the Responsibility of the Designer

The most well-known roles of designers include designing products and determining the interaction between the products and consumers. However, apart from their professional role in their respective capacities, designers also have another role, the social responsibility role.

This role is a result of the great influence designers have on the behavior of people. Moreover, their work requires them to relate and understand the context (i.e., cultural context) of their products and the repercussions of those products in society (Grant & Fox, 1992).

One social responsibility of designers is to guide and provide information. The only way for consumers to know if a product is beneficial or destructive is if they have adequate information about the product. Designers who created the product are responsible for it and therefore have a social responsibility to refine their work based on real-world performance and expectations compared to reality. Moreover, the designers also need to provide society with information that enables them to make the right choices when acquiring products. Through this method, people can ensure that the products they purchase are useful and of benefit to society and know how to distinguish between good and bad products.

Designers also have a responsibility to promote and ensure sustainability. This means that designers have the mandate to ensure that resources are utilized in a way that future generations would still utilize them (Pitt et al, 2009). This mainly comes into play through pollution where designers have a responsibility to ensure the sustainability of ecosystems. This responsibility mandates designers to create products that protect and reduce the harm caused to the planet by other products.

-        Ability to Learn Diversifying Social Change

There are many challenges that society has, had, or will face in sectors such as pollution of the environment and health (Stephan et al, 2016). To solve these challenges, social changes are employed. Social changes are the alterations or a specific order in society. These alterations bear with them repercussions that are either positive or negative to society. On the other hand, diversification refers to the process of availing a variety of routes/ways to handle various situations.

Diversification of social change in design is simply a framework for designers to bring about social change in multiple ways targeting multiple problems. It is an already established fact that there are many problems plaguing society. These are problems that may not be solvable in one way. Diversification of social change brings about many ways of relief which ultimately alleviates the effects of the problem while at the same time reducing the problem.

A good example of this is pollution. There are many ways that pollution can be solved. Designers have designed products such as bike-sharing which reduces pollution while improving public health. Other designers have designed vehicles that reduce pollution and so on. Therefore, diversification allows multiple paths to be taken to solve a problem.

-        Ability to Find a Balance

The effects of designer self-cultivation, responsibility, and diversity in social change greatly impact society. The impact on society can be positive but it may still have some negative effects on other parts of society. Moreover, if the solution generated is not handled appropriately, it may lead to the long-term failure of the project.

One of the benefits of solutions generated includes a reduction in pollution. Solutions also cater to the promotion of public health and solve other problems plaguing society such as

racism. While the benefits may not be complete solutions to the problems, they do influence society to positively change which becomes a solution to the problem. For example, cycling is a behavior that can be adopted by many which may reduce the pollution problem faced by society today through the reduction of vehicles that cause pollution (Zhao et al, 2018).

However, the solutions could also have a negative effect. Every action causes another one to occur. The reduction in using vehicles may mean that transportation companies lose a lot of revenue due to the reduced demand for their products. Moreover, it would also mean that employees of those companies may suffer economically. If the solutions are not organized in the right manner, they may fail. In their failure, more problems may arise from the expected solution.

It is therefore safe to say that the solutions generated may be good for society as a whole, but they may also have negative effects on different entities. For businesses, the reason why some stay away from such activities is that they may feel that the exploits may reduce their revenues and profitability. For most businesses, their sole purpose is simply making profits, and many will put their wants and needs before those of society. Designers should at least be aware of the relation between these factors, and ideally strive to achieve a healthy balance.

- Ability to Think Ahead

To successfully fulfill the objectives of this research, a particular occurrence was chosen, that being the Chinese bike-sharing design. The bike-sharing design was a revolutionary method designed by the Chinese people to address their traffic congestion and pollution problems. While the initiative had its advantages, it also had serious disadvantages which hampered its success.

The innovative bike-sharing design promoted convenience and promoted social values among its clients. It was a widely acclaimed model, and many international organizations gave numerous awards to bike-sharing companies such as Mobike to reward them for their role in reducing pollution which in turn helped alleviate climate change (Sun, 2018).
The companies responsible for the design received a lot of capital from multiple investors which ultimately resulted in problems for them. Rather than effectively managing their current bikes, these companies reacted to increased investments and demand by purchasing more bikes. This turned the bikes which were there to help society especially by reducing pollution into pollution. There emerged a situation where there were too many bikes on the streets and roads which were not originally meant to handle such high numbers of bikes (Ye, 2017).

This goes to show that problems are extremely complex, and design may not be the sole reason for the failure of solutions. However, it also begs the question, if all possible outcomes had been considered by designers, would the poor results be avoided? If the negative effects of the solution would have been identified earlier on and interventions for them created maybe the situation may have been different.

From the literature review and these pillars of research, it is expected that designers can influence positive social change through diversification, self-cultivation, and social responsibility. Based upon the China bike-sharing case study, design alone does not guarantee the success of the initiative taken. Therefore, another generated conclusion from

the literature review and the pillar of research is that design may not be able to solve the problem at hand.

The China-bike sharing design achieved the goal they had set out to do to some extent. However, the design had found new ways to fail that were unanticipated by the designers. This study contributes to designers and social change by showing their importance and not only solving the current problem, but also considering the potential consequences of any given design solution and how those new problems can be avoided or solved as part of the initial project.

Strengths and Limitations

This research was able to link poor design and lack of proper response to problems to failure of designs in China's bike-sharing system (Zhang et al, 2015). The limitation of the research is that it lacked depth. While the research was able to identify many factors that contribute to the importance of social responsibility in design, future researchers should add to the depth of this research. Specifically, primary research should be conducted with users of the bike-share systems to add the user perspective, and there may be a role for statistical analysis of the available data to further support or disprove the conclusions of this research.

Conclusion

A summary of the above designer methods and the analysis of the Chinese bike-sharing system may reveal the importance of socially responsible design solutions to society's problems at various levels, demonstrating designers' position in society as important contributors. Designers play a significant role in affecting social change, which explains their importance. Throughout a designer's career, self-cultivation is essential, as is accepting responsibility for helping to shape the society in which they live. By improving these processes, they ensure that they design products that benefit society and promote social change. Consequently, design improves, and society's welfare also has a chance to improve. The importance of self-cultivation and responsibility for designers cannot be overstated.

Finally, we have seen that designers can contribute to positive social change through diversification, self-cultivation, and social responsibility. An analysis of the China bike-sharing case study suggests that design alone does not guarantee the success of an initiative. To some extent, the China-bike-sharing design achieved the goal it was designed to accomplish. However, the designers did not anticipate several ways in which the design could fail. By demonstrating that it is important to consider not only the current problem, but the potential consequences of any given design solution as well as how these new problems can be avoided or addressed as part of the initial project, this study contributes to the fields of design and of social change.

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