21st Century Design

Shaping behavior for preferable outcomes.

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Abstract

Our traditional approach to the design of policy, systems, services, environments, and products isn’t going to serve us well in the 21st Century. As a result we are going to have to evolve the practice of design to shape behavior for a preferable future. Our proposal is that ‘shaping’ behavior becomes the new function of design in the 21st Century. By defining ‘preferable futures’ as the outcome of our work we are forced to consider the longitudinal impacts of our work socially, culturally, ethically, and environmentally.
Then and Now

Over the past century, contemporary design practice has evolved from its cursory position in post war business processes to an essential competitive differentiator in today’s markets. Yet typical design practices continue based on the assumptions and success criteria of a bygone era. Our aim in this paper is to summarize the reasons why traditional design approaches need to change and then to examine a way forward. At the heart of this thesis are the following beliefs:

1. In the 20th century, design played a critical and important part in western economic growth. An unanticipated outcome of that commercial success was that designers unwittingly contributed to the rise of highly wasteful consumerist culture - which has put us on an unsustainable cultural and environmental trajectory. Design can play a critical role in shaping cultural attitudes and behaviors to reverse this impact.
2. In the late 20th century, design became obsessed with the creation of the ephemeral, luxurious, cool, and the beautiful. These attributes narrowly focus success criteria on creating desirability rather than what we truly need to make us happier and improve our lives. This has also created a short-term focus for design to appeal to the cycles of fashion rather than on providing lasting value and focusing on long-term benefits and outcomes.
3. We believe corporate decision makers and corporations can be powerful forces for positive change if they prioritize positive impacts and outcomes over pure profitability. Although this may sound idealistic, we believe that the only corporations that can sustain continued success, long-term growth, and market leadership are the ones that take a broad view of their impact and take active steps to mitigate undesirable outcomes and promote positive change.

Reductionism and Emergence

At its core, design is a creative effort in problem solving – developing solutions to problems people encounter in the world. Through much of the 20th century, Reductionism was the driving force behind much of the scientific endeavor, engineering, and design problem solving. This way of thinking encourages us to dissect a problem into its constituent parts. By dividing and conquering we can systematically eliminate the overall issue. However, we are beginning to appreciate the limits of this approach when we deal with highly dynamic and complex problems (environment, economy, culture, society). For example, we have learned that our traditional logical and reductive approach to understanding systems has trouble with explaining the actions of single human being, a culture, or a society. Recently there has been a greater appreciation for ‘emergent’ systems, systems that when placed together produce something that is greater than the sum of their parts. Reductionism tends to make us focus on solving aspects of a problem without necessarily understanding
the whole problem. Additionally, it doesn’t address how in the 21st Century we expect design to embrace the idea that many of the most pressing problems we face will need to be tackled holistically rather than piece-meal.

From Shaping Attitudes to Shaping Behaviors

Recent advances in neuroscience and behavioral economics, cognitive psychology, and anthropology are helping us better understand how our brains work, and how decision-making takes place. A core finding of this work is that we are not primarily the products of our conscious thinking, we are instead the products of thinking that happens below the level of awareness. Reason, it turns out, is highly dependent on emotional value judgments, and therefore is highly susceptible to bias.

This is a departure from conventional wisdom in the 20th century where economists and policy makers tended to think of people as rational creatures who would weigh their options and make rational decisions. Successful advertising, branding, industrial and furniture designers seemed to instinctively understand that fundamentally, emotion played a much bigger role in decision making. But there was no shared view about how, and as a result, design was sometimes regarded as an opaque process – clearly impactful, but hard to reproduce, systematize, and control.

Now we are starting to amass a body of evidence built from hundreds of scientific studies documenting dozens of human cognitive biases. These biases are the result of mental shortcuts that lead us all to make less than rational (and in fact highly emotional) decisions, not just in the process of design, but also more importantly as consumers.

Following is a small sample of such biases:

- Optimism bias – Tendency to be overly confident that plans will be successful
- Hindsight bias – Overestimating the probability that events in hindsight were probable
- Placebo effect – Tendency to have an experience aligned with prior expectations
- Impact bias – Tendency to overestimate the future degree of joy or grief due to gains or losses
- Loss aversion – Tendency for people to avoid losses, and to view the cost of giving up an object or entity as greater than the cost of acquiring it
- Status quo bias – Tendency for people to want things to stay the same, and to select a default option when one is present
- Clustering illusion – Tendency to identify patterns when none are present
• Planning fallacy – Tendency to assume tasks will take less time to complete than they actually will
• Resolving cognitive dissonance – Tendency to rationalize or discount evidence that doesn't support the choices made
• Framing effect – Tendency to draw different conclusions based on how and in what order the data is presented
• Endowment effect – Tendency to value things you own more than things you don't
• Hyperbolic discounting – Tendency to value present gains over future gains even if the future gains are greater
• Anchoring – Tendency to base decisions on previously introduced information, even if that information is not related to the discussion
• Bandwagon Effect – Tendency to base actions and beliefs on what other people are doing or believing

A free downloadable toolkit for designing with some of these biases is located at http://www.brainsbehavioranddesign.com

As our understanding of decision-making has grown, we have also made strides in anthropology and sociology resulting in the compilation of the 300+ universal human behaviors common to all cultures. This knowledge enables us to better understand and identify fundamental human needs rather than just our desires.

Designers have been influencing behavior for a long time – Graphic design, for example, has generally been concerned with either the graphic communication of information (implying static transfer of knowledge, but not behavioral change) or the creation of attractive, eye-catching coherent brand stories (attempting to encourage consumer purchasing and loyalty). This design concerned itself with changing or shaping attitudes and emotions towards brands and informing people so that they would engage their rational sensibilities. However, consciously ‘changing’ the behavior of the users is something we argue is a relatively new role.

Shaping and informing opinions is still incredibly important, however one of the clearest findings in the emerging area of ‘persuasive design’ is that you can give people all the facts and create the most informative, attractive communications materials, which may change peoples attitudes towards something, but it is very unlikely to get them to change behavior.

While this recent knowledge of how our brains work is a significant step forward, we are still at the very beginning of learning how to do ‘persuasive design’ effectively. In this
In the 21st century, we’re going to learn a lot more about our irrational behavior and decision-making abilities. That knowledge is going to dramatically impact several design disciplines.

**In practice**

A good example of irrational behavior is the simple fact that many countries across Europe have dramatically different levels of organ donation. It turns out that the countries with participation rates beneath 20% designed the form so you must opt in to the organ donation program when you get your drivers license. Whereas the countries with over 95% participation have designs that make you opt out. This is something simply called the default bias. This principle of default choices has the same tremendous effect on retirement plans, software installation options, among others. In fact, it is so effective it is commonly used in software installation option dialogs as an easy way to increase adoption.

Let us consider a design scenario that shows the Default bias at work. Imagine you are a school administrator who discovers that in a school cafeteria, the order you place the food items on display has a strong impact on the choices made by the students in what foods they end up consuming. You make inquiries and find there is no particular logical order of the food placed in the display. You happen to know that according to the CDC (2011): “Childhood obesity in the USA has more than tripled in the past 30 years.” Armed with this knowledge, what do you do?

1. Leave the order of the foods as is. (Understanding that you are still, albeit arbitrarily, shaping behavior).
2. Change the order of the food so that more healthy options are presented first to the students.
3. Change the order so as to favor more profitable options. (Irrespective of the healthiness of the food.)

So option 1 means you just embrace whatever random order the food was in to begin with. This is a false choice because, in fact, you are, ignoring what you know. As for option 3, as hard up for money as our schools may be, ignoring the health interests of the school children is simply an immoral choice. The only responsible outcome presented is to change the order of the food to promote more healthy choices (choice 2.)

We think the second option is simply common sense. It puts the interests of the constituents in line with the interests of the institution – i.e. the general wellbeing of the student population. We also believe that an analysis of the intangible implications of choice number 2 would benefit the institution by resulting in less sick days, and a healthier student population, which in turn, tends to perform better academically.
Some have called persuasive design, ‘Benevolent Paternalism,’ or ‘Big Brother.’ But this characterization would only be accurate if we were limiting choices, or forcing behavioral outcomes, say by limiting choice to only healthy options. While the scientific study (Just, D. et al, 2008) for this example found that the food order did indeed affect choices dramatically, it was not an absolute change of behavior that occurred and people retained individual freedom to choose different options.

Perhaps more fundamentally, the knowledge we have about behavior in this scenario is a human bias in decision-making that can lead people to favor what is desired over what is actually needed and/or to bias a decision based on the order things are placed in rather than more rational criteria.

So designing in the 21st Century when we are armed with powerful knowledge of our human bias and frailties, you have several choices;

- Ignore what you know - and as a result potentially shape behavior in a completely arbitrary and unplanned way
- Participate openly with declared and responsible outcomes in mind
- Quietly manipulate behavior – we are using the term ‘manipulate’ intentionally and very much in the sense of users being manipulated by unfair or insidious means to ones own advantage (as is the case in option 3 above)

Why is it so important that designers learn to do this? Let’s examine the issue of global warming. A report from the Yale Project on Climate Change and the George Mason University Center for Climate Change communication (2009) examined attitudes toward global warming, and resulted in bucketing people into six groups based on their attitudes, from ‘alarmed’ to ‘dismissive.’ If global warming predictions are accurate, then the behaviors of all these groups need to shift – not just the 18% that are alarmed. These 18% are extremely sure global warming is happening. They’re confident that negative effects have already started. They want an international treaty. They want government to regulate CO₂. But, tragically, this 18% are no more likely to have energy efficient home improvements, or drive energy efficient cars than people who think global warming is a hoax.

To reiterate: one of the clearest findings in ‘persuasive design’ is that you can give people all the facts, which may change their attitudes toward something, but will not necessarily get them to change behavior.
A Preferable Future

The second big idea is this concept of working on a “preferable future.” A particular human bias is our inability to conceptualize the extraordinary rate of technology change anticipated in this century. Ray Kurzweil’s law of accelerating returns (2001) predicts change in the 21st Century at a double exponential rate: “So we won’t experience 100 years of progress in the 21st Century — it will be more like 20,000 years of progress (at today’s rate).” p. 1

Note that Mr. Kurzweil, in his boundless enthusiasm, chooses the word “progress” very intentionally. In this case and too often, the idea of “progress” being framed as the same as “technological innovation” is too simplistic.

Science historian Edward Tenner (1996) reminds us that as our technological capabilities exponentially improve, our ability to predict with clarity the impacts and outcomes that we are creating for business, society, and culture will not keep pace — creating a widening ‘gap’ in our ability to shape a desirable future.

We understand that technological fixes often create bigger problems than the ones they were meant to solve in the first place. For example, the indiscriminate use of antibiotics has yielded hardier strains of bacteria and viruses that do not respond to pharmaceutical treatment.

The wide-scale use of air conditioning in cities has raised the outdoor temperature in some places by as much as 10 degrees, adding stress to already-taxed cooling systems.

Our sophisticated smart phones have created a dangerous epidemic of distracted drivers on America’s roadways. In 2009 alone, nearly 5,500 people were killed and 450,000 more were injured in distracted driving crashes.

Not all impacts of technological change can be known or even imagined, and as the complexity and interconnectedness of our technologies grow, the harder it is for us to see unintended outcomes. However this rationalizing shouldn’t stop us from trying to anticipate the outcomes, adequately prepare for them, or change direction to avoid undesirable outcomes.

One of the key underlying assumptions of our time is that pursuing progress is the same as improving human welfare, when no direct relationship exists. As Mathew Taylor (2008)
points out in his 21st Century Enlightenment talk at the RSA—our society has come to be dominated by three logics:

1. The logic of Scientific and technological progress: That is if something can be discovered it should be discovered.

2. The logic of Markets: If money can be made, it should be. If something can be sold, it should be. Economic growth measured in GDP is something that can continue to rise forever.

3. The logic of Bureaucracy: Whose logic is to force a change of behavior, through the creation of laws, regulatory mechanisms, oversight and penalties.

The limits of the first two logics lie in their indifference to a substantial concern for the general good and the limit of the third is its heavy-handed focus on ‘means’ (campaigning, politics, legislation, and oversight) rather than ‘ends’ (preferential outcomes for all).

In the 21st Century we, (scientists, business people, politicians, and designers) need to make it easier to ask the simple questions: “Is this right?” “Should we do this?” “Where will this take us?” “What are the desirable and potentially unintended consequences?”

We are better equipped today with our knowledge of human behavior and history than at any time before to define preferable outcomes. So in the 21st Century, design is changing so that our traditional design role is not just the givers of form, not just the definers of a ‘user’ experience, not just the visual communicators of brand values. In the 21st Century we must first focus on positive outcomes.

**Application**

In 20th century design beauty, usefulness, usability, delight, desire, and elegance were (and still are) confused. Outcomes and designers, as a result, have ended up being co-conspirators in the rise of consumerism. These words actually represent qualities of a design that may help it achieve desired outcomes, but they are pretty shallow ends in themselves. These aspects of our work are still critically important, they are the craft and execution – the details that make any design successful, but these qualities alone will not help us shape a different preferable future in the 21st Century.

What makes profitability a preferable outcome? Our point is that it’s an implicit outcome in all-commercial activity and therefore should never be prioritized as the most important outcome.
When profits are the primary outcome they easily subvert or soften ethical values and cloud our common sense (remembering the school cafeteria experiment for a moment). At Artefact we place profits as secondary to our primary outcome, which is delivering ‘high quality work — that improves lives by design.’ We can’t do that work if we are not profitable, but that’s not our primary directive.

We at Artefact are in the process of building a framework of specific outcomes that align to our values and beliefs. This has become a shared ethical framework, a growing collection of outcomes that we think are especially important now and will contribute in creating a preferable future.

These include, but are not limited to meaningful contributions to:

- Citizen engagement — Promoting participation and debate around the important issues of our time
- Empathy — To create opportunities for people to understand different perspectives on familiar issues
- Dignity — Helping people develop a sense of their self worth and respect for themselves
- Environmental sustainability — To create and maintain the factors and practices that contribute to the quality of the environment on a long-term basis
- Health and wellbeing — Promoting healthier lives, better medical outcomes
- Liberty — Freedom from control and oppression, the promotion of autonomy and collaboration
- Life long learning — Supporting continued learning and education, creating environments for safe experiments, inquiry and practice
- Timelessness — To create things of lasting value
- Waste reduction — Whenever possible to make people more conscious of waste or to have them avoid unnecessary waste

Multiple outcomes are often desirable in a project and some, like profitability, should be implicit — as I’ve argued. With the above list as conscious starting points, we examine ways in which these high level outcomes might inform strategic and design decisions specifically. Through research and understanding we look for opportunities to shape behavior in macro design of the product experience, as well as through the micro application of specific details in the interaction and industrial designs.

Often looking through such a big lens on a familiar problem can yield unusual ideas and forces a kind of ingenuity that can be a productive source of new ideas and approaches.
For example thinking about printing through the lens of \textit{waste reduction} may at first seem like a conflicting goal but it has led to a printer where the design goal was stated as 'never print something you didn’t want to print.’ This led to a disruptive concept design that we call \textbf{SWYP} (See What You Print).

Thinking about a digital camera through the lens (pun unintended) of \textit{promoting mastery} and \textit{life-long learning} led us to consider the camera as a platform for sharing techniques, applications, and tips that help aspiring photographers take and share better pictures. This is a core feature of our award-winning camera future design, \textbf{WVIL} (Wireless Viewfinder Interchangeable Lens).
Summary

Designers are now armed with a growing set of persuasive techniques. That means we are increasingly effective at shaping behavior. But with great power comes great responsibility.

We are not advocating that commercial interests be de-prioritized or that profits need to be diminished in some way. No outcome I’m advocating involves undermining basic market capitalism.

It is our firm belief that corporate interests that are aligned to preferable outcomes will be the only way to sustain profitability in the 21st Century. It’s also our belief that individuals and governments are only part of the solution to some of the 21st Century’s most wicked problems. Corporate social responsibility as defined here is about aligning profits to a set of preferable outcomes for all of us, talking openly about those potential outcomes and unintended outcomes, and building into your products the power to realize them.

We encourage everyone to think about the preferable outcomes for the things you are working on right now that will create a preferable future. Think about the potential undesirable outcomes too, and work to mitigate those things now. Consider an ethical framework for the values that will guide those outcomes. And be clear to the world about what that framework of values is. Don’t secretly manipulate behavior.

Consider making ‘profits,’ ‘wealth acquisition,’ ‘growth,’ and ‘market dominance’ your implicit but supporting outcomes, rather than prime directives.

In the 21st Century, design can be used responsibly as a powerful tool to change human behavior for a preferable future.
Citations


