

Towards More Mindful Spending: Rethinking Credit Cards

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Introduction

Few technologies have become quite as ubiquitous as the credit card has become in the United States. With an estimated 160 million American cardholders using 1.1 billion credit cards and \$2.378 trillion in purchases,¹ credit cards are truly everywhere you want to be. Credit cards have become so embedded in American society, getting one's first credit card has even become a rite of passage (Manning, 2000, p. 15). With so many consumers choosing to pay with plastic, it should come as no surprise that the country has accumulated a staggering amount credit card debt. While trending slightly down in recent years, an estimated 46.1% of American households hold credit card debt² totaling \$798.6 billion dollars.³ 16% of America's disposable income goes towards servicing credit card debt⁴ and the average cardholder pays over \$800 a year in interest and fees.⁵ People tend to blame the problem of overspending on credit card users. Sociologist George Ritzer (1995) argues in *Expressing America* that Americans "psychologize" the problem of overspending freeing many of the parties involved from blame (p. 7). While true, no one forces consumers to use credit cards or to take on debt, clearly there is more to the story than a lack of self-control. Winner (1999) makes a compelling argument for

¹ United States Census Bureau. (2012). *The 2012 Statistical Abstract* [Data file]. Retrieved from <http://www.census.gov/compendia/statab/2012/tables/12s1188.pdf>

² Federal Reserve. (2009). *Changes in U.S. Family Finances from 2004 to 2007: Evidence from the Survey of Consumer Finances*. http://federalreserve.gov/econresdata/scf/files/2007_scf09.pdf

³ Federal Reserve. (2012). *Consumer Credit – G.19* [Data file]. Retrieved from <http://www.federalreserve.gov/releases/g19/Current/>

⁴ Federal Reserve. (2012). *Household Debt Service and Financial Obligations Ratios* [Data file]. Retrieved from <http://www.federalreserve.gov/releases/housedebt/>

⁵ Consumers Union. (2007). *The Effect of Current Credit Card Industry Practices on Consumers*. Retrieved from http://www.consumerfed.org/elements/www.consumerfed.org/file/finance/Credit_Card_Senate_Testimony_01-07.pdf

the idea that the technologies and tools people create and use have their own inherent politics by structuring relationships and imposing certain orderings upon the world. Winner uses the example of New York highway overpasses that were built (intentionally or not) too low to allow public transportation to pass. The design of these overpasses had the effect of restricting access to only affluent segments of the population changing the way many people experienced the world. In a similar way, credit cards, through their design, impose their will (intentionally or not) by allowing consumers to effortlessly go into debt.

A core tenant of the human-centered design philosophy is to not blame the user. If consumers struggle to use a product, it is the responsibility of the designers to fix it (Norman, 2002). Rather than continuing to “psychologize” the problem, this paper takes a broader look at credit cards to understand why consumers have difficulty controlling their spending when they use plastic. I use three analytic lenses to better understand the credit card: historical, structural, and psychological. As a framework for interpreting the history and adoption of the credit card, I reference Cowan’s (1987) notion of the consumption junction where the consumer is “embedded in a network of social relations that limits and controls the technological choices that she or he is capable of making” (p. 262). For the structural aspects of credit cards, I expand upon Don Norman’s (2002) concept of affordances which he defines as “the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (p. 9). For the psychology of credit cards, I incorporate findings from behavioral economics such as temporal discounting, loss aversion and reference groups to explain why people struggle with credit cards. While self-control is surely a component of the troubles people have with credit cards,

ultimately, the affordances of credit cards, both physical and psychological, are what actually encourage people to overspend and go into debt. To alleviate the problems associated with credit cards, I look at the features of credit cards that allow consumers to go into debt and argue for fundamentally redesigning the credit card.

Before diving into the history of the credit card, a note on terminology. This paper focuses primarily on universal credit cards such as Visa and MasterCard. These cards come with a revolving credit line allowing users to carry a balance, which typically accrues interest after a grace period. Charge cards, retail cards and debit cards, while physically identical to credit cards, function differently in important ways that limit a consumer's ability to go into debt. Charge cards, the most common being American Express, must be paid off in full at the end of the month and do not allow for a balance. Retail cards can be either credit or charge cards but are only useable at the issuing retailer. Debit cards are tied to a consumer's checking account and money is withdrawn automatically, which requires enough money in the account to cover the purchase. There are implications for other payment mechanism such as checks, electronic fund transfers and more recently virtual wallets using near field communication technologies; however, I focus on credit cards because of their ubiquitous nature. As I will show later, it is the unique revolving credit "feature" of credit cards that gets most consumers into trouble.

History and Adoption By Consumers

As with any technology, to fully understand current credit card use, it is instructive to look at the history of the credit card and understand how the artifact came to be. In particular, it is useful to look at consumers' attitudes towards and adoption of the credit

card as use indicates a shift in people's acceptance of the product. When credit cards first appeared, societies had been using paper money for thousands of years, coins and other tokens even longer (Evans & Schmalensee, 1999). When and why did consumers start choosing to pay with credit cards over more traditional forms of payment? In her study of the evolution and adoption of stoves in Colonial America, Cowan (1987) proposes the idea of the consumption junction which places the consumer at the center of a "network of social relations" that both influence and dictate his or her choices when picking one technology over another. In doing so, she rejects the idea that consumers adopt new technologies simply because they are better. I find the consumption junction concept relevant to credit cards since consumers are faced with a choice of technologies every time they make a purchase. Cash or credit? With most consumers carrying both forms of payment, why do they choose credit?

To answer the question of when consumers began paying with credit cards, I begin by looking at important developments in the history of the credit card. The precursor to the modern credit card, the retail charge card, was developed at the turn of the 20th century as oil companies and high-end department stores attempted to make shopping easier for their most trusted and valuable customers (Ritzer, 1995). Since no money was made directly from the extension of credit itself, the purpose of these early cards was to encourage customer loyalty and increase sales. The main benefit of these early proprietary charge cards was the ability to make purchases larger than the amount of cash on hand. Cards were also considered a more modern way to pay (Manning, 2000). The cards came with many limitations, however, which prevented mass adoption by consumers. Stores were selective to whom they offered cards, balances had to be paid off in full at the end of each month, cards had to be renewed frequently and they could

only be used at the issuing store. Compared to traditional money, early charge cards simply did not offer enough additional benefits to warrant use. Furthermore, as the Gilded Age and Progressive Era collapsed into the Great Depression, consumers' willingness to take on debt was dramatically reduced, a substantial setback to the adoption of the credit card (Manning, 2000). Thus, from the perspective of a consumer in the early 1900s choosing between cash or credit, if they had the choice at all, cash was the easy choice to make.

Two important innovations helped tip the scales in credit cards' favor: revolving credit and the introduction of universal cards. Cards with revolving credit began to circulate by the 1930s allowing consumers to repay part of their balance while accruing interest on the remainder (Ritzer, 1995). With the requirement to repay in full removed, consumers could now buy things they could not actually afford. This ostensible "feature" dramatically increased what people could purchase with their credit cards increasing use and perceived utility. The second innovation, the universal card, allowed consumers to use their cards at any participating retailer, making credit cards a more practical alternative to money, which was already universally accepted. Universal cards also benefited merchants as they no longer assumed the risks, costs, or hassles of issuing cards themselves (Manning, 2000). Unlike earlier retail charge cards, issuers of universal cards made money directly from the extension of credit by charging annual membership fees, interest on unpaid balances and per transaction fees paid by merchants. This change in the economics of credit cards created new incentives for credit card companies to encourage consumers to take on more debt.

While there were several earlier attempts at universal cards, the first successful card was the Diners Club card, which was first issued in 1949 followed by Carte Blanche and

American Express in 1958 (Ritzer, 1995). These early universal charge cards required balances to be paid in full each month and were primarily used by businesses for business-related travel and entertainment expenses limiting their adoption by regular consumers. Their success, however, encouraged retail banks to start issuing universal cards with revolving credit to consumers. Two cards worth noting due to their continued dominance of the industry today are the BankAmericard issued by California-based Bank of America in 1958 and the MasterCharge card issued by a consortium of Chicago banks in 1966. BankAmericard was rebranded to Visa in 1977 and MasterCharge became MasterCard in 1979 (Ritzer, 1995).

While the universal card was immensely more useful to a consumer, its success was not always guaranteed. For a credit card to be truly universal, a critical mass of consumers had to carry the card and consumers had to be able to use the card wherever they wanted shop; a chicken and egg problem (Evans & Schmalensee, 1999). Consequently, the nascent credit card industry took on a massive enrollment campaign to add both merchants and consumers to their networks. The benefits to merchants mentioned earlier made their enrollment relatively easy. Merchants were more than willing to pay a small fee to reduce the risk associated with issuing their own credit and consumers appeared to spend more when they paid with plastic (Evans & Schmalensee, 1999). For consumers, credit card companies turned to large-scale mailings and massive advertising campaigns. Bank of America launched their BankAmericard with the industry's first (of many) dubious mass mailings sending some 60,000 Fresno-area residents unsolicited credit card offers. In the 12 years that followed, Bank of America sent over 100 million offers (Manning, 2000). Today, credit card companies send over 6 billion offers annually with a mind-boggling \$4.6 trillion in credit made available by

card issuers.⁶ With more merchants and more consumers carrying cards, by the early 1960s, the foundation for the modern day credit card had been laid.

Even as many of the structural and functional issues with credit cards were resolved, cash was still preferred to taking on debt (Manning, 2000). In 1945, outstanding nonrevolving credit was a mere \$5.6 billion (revolving credit was not recorded until 1968).⁷ To put that number in perspective, in 1970 total outstanding *revolving* credit alone was \$3.9 billion. By 1980, the number had skyrocketed to \$56.1 billion. 10 years later, the amount nearly quadrupled to \$217.9 billion.⁷ For a country founded on Puritan ideals of hard work and saving, personal debt was heavily frowned upon (Manning, 2000). For credit cards to go truly mainstream, consumers had to dramatically change their buying and saving behavior. In *The Decline of American Thrift*, Tucker claims that “installment buying required a moral revolution against the Puritan ethic” (Tucker, 1990, p. 114). To answer the question of why consumers became comfortable with debt and switched to paying with credit, we can look to the rise of consumerism during the post-war Pax Americana period.

During World War II, most Americans took fairly extreme austerity measures which was reflected by an average personal savings rate close to 25%, a 17 percentage point increase over the years preceding the war (Manning, 2000). With a war raging and memories of the Great Depression still vivid in many Americans’ minds, the early 1940s were a cautious time. After the war ended, with other countries’ economies in shambles, the United States experienced a period of unbridled growth, prosperity and

⁶ Consumers Union. (2007). *The Effect of Current Credit Card Industry Practices on Consumers*. Retrieved from http://www.consumerfed.org/elements/www.consumerfed.org/file/finance/Credit_Card_Senate_Testimony_01-07.pdf

⁷ Federal Reserve. (2012). *Consumer Credit – G.19* [Data file]. Retrieved from <http://www.federalreserve.gov/releases/g19/Current/>

optimism. The unemployment rate dropped from an average of 20% during the 1930s to an average of 5% and mean family income roughly double over the three decades following the war (Manning, 2000). Additionally, an influx of affordable housing coupled with federally encouraged homeownership and an extensive network of publicly financed roads and highways enticed many Americans to move out of urban centers and buy homes in the suburbs (Manning, 2000). Between 1940 and 1950 homeownership increased 11.4 percentage points, the biggest gain in the past century.⁸

From the perspective of the average consumer, everything was looking up. What incentive was there to save if there was so much for the taking and no rainy days in sight? Indeed, America's unprecedented levels of optimism for the future led to unprecedented levels of spending. Living in a single family home in the suburbs required Americans to buy more: cars, appliances, furniture, decor, lawn care products, household maintenance supplies, insurance, etc. With the belief that there would continue to be more jobs and rising income in the future, consumers became willing to take on debt to acquire the things they needed. Ritzer (1995) describes credit cards as the "grease" necessary for America to continue to grow (p. 32). Furthermore, the country's increasingly mobile population was decreasing ties with local businesses leading to a rise in national chains and more impersonal transactions. According to Manning (2000), "formal sources of installment credit became necessary as the personal bonds of Main Street were replaced by the antiseptic suburban mall" (p. 83). With newfound social acceptance of debt, credit cards had finally gone mainstream.

⁸ US Census. (2011). *Historical Census of Housing Tables* [Data file]. Retrieved from <http://www.census.gov/hhes/www/housing/census/historic/owner.html>

Before continuing on to the 1970s and 1980s, I want to clarify that this paper is not meant to be anti-credit. While my tone may be critical, credit is not inherently bad and actually provides numerous benefits to consumers. If shoppers pay off their balance every month, credit cards are an extremely convenient way to purchase goods and allow consumers to smooth out their consumption. Credit cards are essentially an interest free loan when used “correctly”. And for the better part of the credit card’s early history, that is how consumers used their cards (Manning, 2000). Unfortunately, consumption appears to behave like a gas, expanding to whatever resources are available.

By the 1970s, the United State’s economy started slowing down yet Americans continued to buy. Real wages stagnated, inflation reached double digits, and the unemployment rate roughly doubled between 1970 and 1975 reaching a high of 10.8% in 1982 (Manning, 2000).⁹ With the economy slowing down, it seems reasonable to think consumers would slow down as well. Less money coming in means less money going out, right? Unfortunately, downward mobility is an extremely unpleasant experience for most. “Consumption patterns tend to be influenced by their perception of future economic perceptions... rather than by current trends—even during periods of declining real wages or economic difficulty” (Manning, 2000, p. 127). Rather than experience the pain associated with sacrificing, consumers used credit to cover the gap ushering in what Manning calls the “decade of debt”. There was a perverse rationality to the whole setup. Again from Manning:

⁹ Bureau of Labor Statistics. (2012). *Labor Force Statistics from the Current Population Survey* [Date file]. Retrieved from <http://data.bls.gov/timeseries/LNS14000000>

Why invest in a passport savings account that yielded only 5 percent when inflation was climbing above 15 percent and later even 20 percent? Why delay purchasing a new car, appliance, or furniture when inflation substantially reduced the final cost? Most important, why accept a reduction in one's stand of living due to declining real wages when consumer credit could obscure this economic reality and minimize the social pain of potentially agonizing household adjustments? (Manning, 2000, pp. 17-18)

Hence, during the 1970s and 1980s, credit cards went from being convenience item to a necessity. America's need for credit to get by is reflected by the country's outstanding credit card debt, which rose from a modest \$39 billion in 1970 to \$56.1 billion in 1980 to a whopping \$217.9 billion by 1990 to an all-time high of \$989.5 billion in 2008.¹⁰ Americans became so reliant on debt to continue living at a previous standard of living, by 1998, the country achieved the dubious honor of a negative national saving rate (Manning, 2000). Clearly, there is something unique about the credit card that allows consumers to make such financially disastrous decisions.

Affordances

With the history, gradual adoption, and later dependence upon credit cards established, I will now turn to the credit card itself. Are there specific properties or, affordances, of credit cards that facilitate going into debt more easily than when using money? Norman's (1999) notion of affordances focuses primarily on the actual and perceived properties of artifacts that signal to users how they can be used. For example, a handle signals that something can be lifted or pulled. Frustrated by the design community's

¹⁰ Federal Reserve. (2012). *Consumer Credit – G.19* [Data file]. Retrieved from <http://www.federalreserve.gov/releases/g19/Current/>

apparent misuse of the concept, he later clarified the difference between “real” affordances, “perceived” affordances, constraints and conventions (Norman, 1999). Real affordances are physical properties of the world while perceived affordances provide hints for how to operate something. A button on a computer screen that looks clickable would be an example of a perceived affordance while the fact that a user can click anywhere on screen regardless of what is being rendered would be a real affordance. Similarly, constraints and conventions limit some uses while encouraging others but are not necessarily physical properties of the world; they are learned. Norman emphasizes, “Symbols and constraints are not affordances. They are examples of the use of a shared and visible conceptual model, appropriate feedback, and shared, cultural conventions” (p. 41).

While physical properties and perception are important aspects of both real and perceived affordances, Norman’s definition limits the concept to only the most literal properties of an object making it less useful when looking at symbolic objects like money and credit cards. While both have physical properties that impact their use, many of the ways people use money and credit cards rely heavily on what Norman would bracket under social conventions. Norman does not include the roles learning, culture or society have on a user’s intuitive understanding of an object’s capabilities. Since all objects are embedded in, and ultimately defined by, the surrounding culture, conventions seem impossible to ignore when talking about how people come to understand the capabilities of an object—in other words, what the object affords. I would argue that conventions, once learned, are just as powerful as real affordances and should be given equal weight when talking about what an object affords. For example, reading and written language rely heavily on conventions and agreed upon

symbols, however, once people learn the symbols and conventions, it becomes impossible to unsee letters and words. While it might be a social convention that the letter *a* looks the way it does, it becomes just as powerful as physical properties of the world for understanding and interpreting the world once learned.

I am not the first person to extend affordances beyond Norman's limited definition. Gaver (1991) proposed the addition of sequential affordances which allow for exploration and discovery of how something works and nested affordances which are affordances "grouped in space" indicating the potential for more complex actions. In response to Norman's clarification of real and perceived affordances, Hartson (2003) proposed a taxonomy with four types of affordances: cognitive, physical, sensory, and functional. Cognitive affordances are the most relevant for the current discussion and are defined as "a design feature that helps, aids, supports, facilitates, or enables thinking and/or knowing about something" (Hartson, 2003, p. 319). Expanding the definition of affordance beyond the physical to include the psychological and the social is relevant for money and credit cards because nothing physical about these artifacts implies that value can be exchanged yet that is their core function and it appears that people understand the concept from a very early age (Furnham & Argyle, 1998).

Physical Affordances

To better understand the affordances of credit cards (or better, lack there of), I start by looking at the physical affordances of money that allow consumers to better manage their finances. First, and most importantly, money has physicality. Having more money on hand means having more bills, leading to a bigger, bulkier, heavier wallet. At a certain point, a consumer cannot practically carry additional money. This built in

physical limitation of money helps control how much a consumer can buy with money at any given moment. Because of the physicality of money, a consumer can also easily see how much money he or she currently has available. Money is a stateful medium, meaning it maintains and broadcasts its present state. Along the same lines, a consumer sees money disappear as it is exchanged for goods and services. Later, I show how the transparency of money and the psychological pain associated with letting go of it plays an important part in limiting how much people spend. Another affordance of money is its finiteness. A consumer can only spend the money he or she has on hand. While it is technically possible to get more by going to bank or an ATM, the extra effort to do so is often prohibitive. If a shopper walks into a store with \$20, she is clearly not going to leave with \$100 in purchases. Instead of making the larger purchase, she has to come back later with more money. If the purchase was not a necessity, it is easy to imagine her doing without. Another interesting property of money is its value is physically tied to the bills it is printed upon. Thus, if money is lost or stolen, the owner no longer has the value. This aspect of money makes people weary of carrying more than absolutely necessary. Taking these affordances together, money provides a direct feedback loop to the consumers informing them immediately of value gained or lost. The physical affordances of money act as limiting functions on its use and either slow down, delay, or inhibit transactions. Consumers are more aware of their spending when they use money. While there is a tendency to think of faster as a proxy for better, when it comes to finances, these delays may be crucial for consumers' ability to monitor and control their spending behavior.

Credit cards are quite different from money in terms of their physical affordances and can almost be defined by their lack of affordances, as most of the physical limitations

inherent in money are no longer present. While credit cards are still physical objects, they are smaller and lighter (\$100 in \$10 bills weighs about 10 grams while the average credit card weighs less than 6 grams) making them easier to carry.¹¹ Furthermore, since a single credit card can represent anywhere between a \$500 and \$100,000 credit line, there is no longer a 1:1 correlation between value and occupied space. Anyone who has purchased something off of the internet knows a credit card can be further abstracted to an account number, meaning consumers no longer have to physically carry anything. Credit cards are also stateless. Looking at the card tells consumer nothing about the number of purchases made, the amount of money spent, amount available, previous balances, etc. Every swipe looks exactly the same. A \$10 purchase looks and feels no different from a \$1,000 purchase. Consumers no longer have to count out money or see it disappear as they make purchases with credit cards. Since the value of credit cards is no longer tied to the physical object, if a card is lost or stolen, it can easily be replaced making it safer than money giving consumers a sense of security. Perhaps the biggest difference between money and credit cards is that, by their very nature, credit cards allow users to spend money they do not actually have. If the same shopper above walks into a store with \$20 *and* a credit card, she can walk out with thousands of dollars in purchases. Because credit cards essentially provide an unsecured loan, she may not even have the resources in the bank to cover her purchases. The lack of physical affordances creates a cognitive disconnect making it easier for consumers to overspend. Research looking at the effects various payment mechanism have on spending shows that consumers tend to buy more both in volume and value when using credit cards (Hirschman, 1979). Unlike money, credit cards create a highly opaque form of payment that encourages consumers to spend more and think less.

¹¹ Bureau of Engraving and Printing. (2012). *FAQ Library*. <http://www.moneyfactory.gov/faqlibrary.html>

Psychological Affordances

Moving from the physical to the psychological, credit cards employ numerous techniques that encourage consumers to overspend. Starting from the most basic features, names like MasterCard and Visa emblazoned on the cards and symbols like the globe and a soaring eagle help make the shopper feel invincible, like they are masters of their domain able to buy anything and go anywhere (Ritzer, 1995). While names and symbols may not seem that important for consumer spending, Richard Feinberg (1986) of Purdue's Department of Consumer Science and Retailing found that simply displaying credit card logos increased the amount consumers spent. If the presence of a simple logo can increase the amount of money consumers spend, think of the effect hundreds of millions of dollars spent on advertising the lifestyle credit cards afford has on shopping behavior (Manning, 2000; Schor, 1999). Slogans such as Visa's "It's everywhere you want to be" and MasterCard's "Priceless" advertising campaign may have more impact on consumers than they are willing to admit.

Credit cards also employ tactics designed to lessen the psychological pain associated with paying. Rewards are probably the most blatant forms of such tactics. Every dollar a consumer spends now earns them points, flights, vacations, gift certificates, and even cash back. By analyzing survey data about consumers' experience with credit card rewards, Ching and Hayashi (2010) found that removing rewards would decrease credit card usage between 3 and 11 percentage points. Paying with cash, unfortunately, offers no such additional benefits. Beyond just rewarding consumers, credit card companies have tapped into Americans' strong desire for individuality by allowing them to express their identity through affinity and co-branded cards. Just about any group imaginable from the National Rifle Association to the Human Rights Campaign has an

affinity credit card. Owners of these cards not only support their favorite cause, they also let others know what they believe in with every purchase. “By exploiting our social craving to establish personal identities through group associations, affinity cards provide the cardholder with instant recognition” (Manning, 2000, p. 7). While most consumers would be fine with a single credit card, in reality they possess an average of 6.8 cards.¹² Reward and affinity cards encourage consumers to amass a collection of cards to ensure they have the “right” card for any given situation (Hirschman, 1979). Additional perks credit cards offer include product discounts, insurance, extended warranties, exclusive access to events, concierge services and price protection (Ritzer, 1995). Even if consumers never redeem these rewards or use the additional privileges, knowing they are available makes paying with credit cards that much more enticing.

I have mentioned several times, but have not elaborated on, the pain associated with paying, especially when it comes to paying with money. Why is paying with cash so painful and why do credit cards make a difference? A fairly robust finding in the behavioral economics literature is that people tend to experience loss aversion where “the disutility of giving up an object is greater than the utility associated with acquiring it” (Kahneman, Knetsch, & Thaler, 1991, p. 194). The simple act of owning something imbues the object with more value to the owner than it originally possessed. Building on the idea of loss aversion, it seems likely that the salience of a loss would moderate the amount of pain experienced. In other words, the more aware someone is of a loss, the more painful the experience should be. Similarly, the more salient a payment mechanism, the more psychologically painful the payment should be. Soman (2003) introduced the concept of payment transparency as a way to measure “the relative

¹² United States Census Bureau. The 2012 Statistical Abstract [Data file]. Retrieved from <http://www.census.gov/compendia/statab/2012/tables/12s1188.pdf>

salience of the payment, both in terms of physical form and the amount, relative to paying by cash” (p. 175). Since credit cards are low in transparency, all things being equal, consumers should spend more when using a credit card than when using cash. By analyzing hundreds of grocery receipts, Soman found that consumers do in fact spend more when using credit cards and that they purchase a larger number of nonessential items. When paying is less painful, it becomes easier to do.

One reason credit cards are less transparent, and therefore less painful to use, is they significantly delay the transfer of value compared to cash which impacts consumers willingness to spend. It typically takes two to three days for a retailer’s account to be credited by the credit card company and consumers usually have a month to repay the loaned money. Having a month to pay off a purchase changes the mental calculus for deciding whether to buy something or not. A growing body of research shows that people have inconsistent preferences over time. More specifically, people tend to use a roughly hyperbolic discount function meaning they have “a relatively high discount rate over short horizons and a relatively low discount rate over long horizons” (Laibson, 1997, p. 445). Translation: people prefer immediate gratification in the short term but *think* they will have more self control in the future. Unfortunately, when the future comes, the present self still prefers immediate gratification leading people to continually put off things until later. The converse seems equally plausible; people prefer delayed losses in the short term *thinking* they will be able to pay off their debts in the future. Yet, when the time comes to pay off those debts, more pressing immediate needs prevail. In his oft-cited article on the failure of competition in the credit market, Ausubel (1991) argues that a large number of consumers do not intend to borrow (i.e. carry a balance) on their credit cards but do so continuously. Hyperbolic discounting

also accounts for the lure of low introductory “teaser” interest rates and no annual fees for the first year that later increase even though consumers would often be better off with higher, fixed rates (Shui & Ausubel, 2004).

The last psychological affordance of credit cards I want to cover, and in many ways the most fundamental, is the card’s inherent ability to distort reality by allowing consumers to live beyond their means. Why does being disconnected from one’s financial reality matter? It allows consumers to overspend without knowing they have gone overboard until it is too late. People are terrible at making judgments in absolute terms. Instead, they compare themselves to reference groups or a “comparison group located nearby in the social hierarchy” to gauge their progress, accomplishments, even their happiness (Schor, 1999, p. 27). Even something as simple as picking the longer of two lines can be influenced by others (Asch, 1951). If credit cards allow consumers to buy more than they could ever hope to with money alone, when people look out into the world to see how they stack up, they no longer receive accurate signals. Consumers do not see the debt others go into to afford the lifestyles they outwardly present; they only see the material objects they have acquired. A major problem with distorted reference groups is there will always be someone who appears to be doing better creating an “ever shifting process in which high-status individuals attempt to keep a step ahead of low-prestige imitators” (Schor, 1999, p. 36). As Harvard sociologist Juliet Schor (1999) stated in her book on the rise of American consumerism,

For many low-income individuals, the lure of consumerism is hard to resist. When the money isn’t there, however, feelings of deprivation, personal failure, and deep psychic pain result. In a culture where consuming means so much, not having money is a profound social disability (p. 39).

Conspicuous and competitive consumption have become defining features of American consumerism. Credit cards appear to be fanning the flames.

Compared to money, the properties and affordances of credit cards significantly speed up and simplify transactions, delay the impact of spending behavior and further remove consumers from their financial reality through obfuscation. The physical and psychological affordances of credit cards drastically decrease the amount of thought and awareness a consumer must exhibit when making a purchase. In a survey on spending behavior, more than 65% of respondents were unable to articulate where their money goes each month (Schor, 1999). Unfortunately, thought and awareness are key factors for living within one's means and successful financial planning. Schor summarizes the problem well: "We spend more than we realize, hold on to debt more than we admit to, and ignore many of the moral conflicts surrounding our acquisitions" (p. 83). Credit cards, by their very nature, facilitate this alternate reality by disconnecting people from the purchases they make.

Implications For Design

As mentioned in the introduction, a core tenant of the human-centered design philosophy is to not blame the user for mistakes they make using a product (Norman, 2002). While user can be expected to invest some time in learning how to use a product, if a problem is systemic in nature, designers have the responsibility to understand why people have difficulty with the product and redesign it in such a way that helps people better use it. Credit cards, as demonstrated above, are incredibly antagonistic towards their users almost begging them to go into debt. What follows are both existing practices used to cope with problems created by credit cards as well as suggestions for

how the credit card might be redesigned to once again give consumers control of their spending.

One way people have used to manage credit cards is through legislation. Over the years, numerous laws have been passed to protect consumers from usurious lending practices, predatory lending and other deceptive or unfair terms and conditions (Ritzer, 1995). The most recent law, the Credit Card Accountability Responsibility and Disclosure Act of 2009, or what some refer to as the Credit Cardholders' Bill of Rights, tackles some of the credit card industry's most egregious practices such as arbitrary interest rate increases, unreasonably short notices, bill due date gimmicks, universal default, and issuing cards to youths (Schultz, 2010). While certainly a step in the right direction, given the amount of legislation that has been passed over the years attempting to protect consumers and the endless "innovation" financial institutions seem to use to sidestep legal requirements, I do not have much faith in legislation fixing the problem.

Before diving into new design approaches, I will review existing ways consumers attempt to control their spending with credit cards. For many consumers, simply leaving the credit card at home helps reduce the impulse to use it. More extreme measures include physically cutting up cards, demagnetizing the magnetic strip on the back, covering the card with a sticker reminding the consumer to pay off their debt and literally freezing credit cards in water requiring them to unthaw before being able to use them again (Baxter, 2011). Ritzer proposed putting a warning label akin to those found on cigarette packages letting consumers know that using credit cards causes debt (Ritzer, 1995). All of these methods have something in common: they make credit cards more difficult to use without thinking. As mentioned earlier, credit cards lack many of the physical affordances that slow down consumption while simultaneously exploiting

a number of psychological affordances that encourage overspending. It appears as though some consumers are aware that credit cards make buying too easy.

Other than altering the card, consumers also have new online tools like Mint.com or ReadyForZero.com which automatically and continuously pull in credit card transaction data allowing consumers to better understand their spending habits as well as create customized debt repayment plans and budgets. Whereas credit cards reward consumers for spending more, these tools reward consumers for paying down their debt and staying within their budget. Most of these methods for managing credit card require a cardholder to be aware of or admit that they have a problem using their credit card. I think it is possible to push even further and rethink the credit card building into the artifact itself ways of letting consumers understand, monitor, and control their finances. With advancements in batteries, charging, E-Ink, flexible screens and sensor networks, making a truly “smart card” seems within the realm of possibilities.

Inspiration for redesigning the credit card came from the success of Bank of America’s Keep the Change® debit card program developed in partnership with the human-centered design firm IDEO. Customers enrolled in the Keep the Change® program have purchases made on their debit card automatically rounded up to the nearest dollar with the added charge being put directly into their savings account. The program has over 12 million members and has generated more than \$3.1 billion dollars in savings since its inception (IDEO Website, 2012). In some ways, debit cards already solve many of the problems associated with credit cards. Requiring users to have enough money in the bank to cover their purchases makes overspending much more difficult. If outlawing credit cards was a practical option that would be my ultimate recommendation. However, since Americans tend to be strongly opposed to mandates and paternalistic

legislation, banning credit cards seems highly unlikely (Thaler & Sunstein, 2003). While the Keep the Change® is commendable for trying to help customers save, it is only available for debit card users limiting its reach and has the unfortunate side effect that comes with credit card reward programs—it encourages consumers to buy more because the more they spend the more they get in return.

As called out in the physical affordances section, credit cards obscure spending and remove the sense of loss inherent to paying with cash. One way a new smart credit card could help consumers control their spending is by making spending visible again. There are numerous ways to tackle visibility. A small E-Ink screen on the card could show a running tally of the amount spent or the outstanding balance. The display could even change from black to red to reinforce the idea that the more a consumer spends, the more debt he or she is taking on. Perhaps the whole card could change color as the user spent more money creating a public shaming aspect to overspending. If the card had network capabilities, it could pull in additional data from all of a consumer's accounts, giving universal cards a whole new meaning. A networked card could provide real-time updates of funds available and an overall sense of financial well-being. While putting all of the required technology into the form factor of a credit card may be difficult, certainly smart phones equipped with virtual wallets could easily add this functionality.

With cash, when consumers run out, they can no longer make purchases. While credit cards have limits, they tend to be extremely high, easily double what the average cardholder earns in a month. More realistic daily limits would help signal to cardholders how much they spent and prevent wild overspending. These limits could be set manually by the consumer or intelligently based on aggregate financial data

provided by the consumer. They could also be general, applying to any purchase a consumer makes or more nuanced not only combatting overspending but additional vices a consumer might be struggling with. For example, a smoker in a cool state of mind not craving a cigarette could set up his card to disallow purchases of cigarettes. These commitment devices help the future-self stick to the plan when the time comes. Shortening the billing cycle would also help with the problem of temporal discounting. The closer the payment is due to the date of the purchase, the less willing consumers would be to take on additional debt. Again, a consumer could manually set their billing cycle or an intelligent due date could be set based on past usage and aggregate financial data.

There is an inherent conflict with fixing the problems built into credit cards that I have conveniently overlooked until now. Credit card companies make the majority of their revenue from consumers who do not pay off their balances on time incurring interest charges and late fees. In fact, consumers who pay off their balances on time are internally referred to as “deadbeats” (Manning, 2000). There is little incentive for credit card companies to do right by their customers, which helps explain the number of laws attempting to rein in credit card companies. Given this set up, the ultimate solution to creating a card that helps consumers might be to sidestep traditional credit card companies altogether. Microfinancing products like Kiva.org, Prosper.com and LendingClub.com use a distributed peer-to-peer model for lending cutting out the middleman, substantially lowering costs to borrowers and offering better returns to investors. Borrowing and loaning money with these products is no longer an anonymous transaction with a multi-billion dollar corporation. Instead, these services facilitate real people helping other real people. Currently, these products only offer

more traditional installment loans. Extending the P2P concept, I can imagine a peer-to-peer, on demand credit card where each purchase is covered by someone else in the network who in turn receives a moderate return on his or her investment. Cutting out profit hungry credit card corporations would lead to better interest rates, fewer fees, and create an overall more transparent revolving credit product. Consumers have become incredibly disconnected from their financial reality. This P2P credit card system combined with additional design suggestions above would put consumers back in control of their financial destiny.

Conclusion

Consumers are fairly ambivalent about their credit cards. In a survey of credit card users, consumers reported that, on the one hand, they strongly dislike that credit cards make buying things they cannot afford too easy. On the other hand, they felt the best feature of credit cards was the convenience of being able to repay over time (Manning, 2000). Having amassed billions of dollars in debt, clearly there is room for making the situation better. Reviewing the history, adoption and gradual dependence on credit cards provided a better understanding of why consumers choose credit over cash. The affordances, both physical and psychological, of credit cards help explain why plastic makes managing finances so difficult. Lastly, implications for design provided suggestions for making a more human-centered credit card. Fixing credit cards is just the tip of the iceberg. The number of ways consumers have to pay has exploded in recent years as financial institutions continue to “grease” the wheels of commerce. Many of the problems I have called out with credit cards apply equally newer forms of payment, if not more so. Any financial product that speeds up transactions, reduces the pain of paying, and allows consumers to spend more than they have will inevitably lead

to overspending and debt. Ultimately, I think the way to move forward is to put power back into the hands of consumers whether it is through better tools to manage spending, adding new affordances to credit cards, a peer-to-peer credit card product, or some a combination of the three. It is time to give consumers a better, more responsible way to pay.

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