Capitalism, Addiction, and Public Policy

Defining the Next Generation of Treatment Machinery

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Executive Summary:

Historically, capitalism, addiction, and public policy have been intertwined. The typical cycle consists of product “innovation” which leads to addiction, and then a slow public policy response. One can classify these cycles in three distinct categories based on the addictive qualities of the product. Category one consists of highly addictive drugs such as opium and heroin where the primary response has been regulatory in nature. However, regulatory means are not sufficient for category two threats such as alcohol and tobacco because these products have been integrated into social rituals and the scope of impact is much broader. In this case, the public policy response has been augmented by the use of persuasion through a combination of mass media and social enforcement to be effective. Today, the biggest threat to public safety is driven by the issues of obesity driven by the “innovations” from the food industry. The current public policy machinery is not sufficient to address this issue.

In this position paper, we discuss the intersection of capitalism, addiction and public policy in historical terms, and propose a methodology which defines the capabilities required for the response for the category three threats. We note that our proposed methodology would also be effective for categories one and two threats such as the opioid crisis.

Background:

Capitalism is an economic system focused on building goods and services which are valued by the consumer. This leads to situations where the producers are providing goods/services which add value to consumers. However, capitalism is impartial on the topic of adding value because all that really matters is that the consumer is willing to

buy the product. Thus, the perfect customer is a consumer who is addicted to the product, and the driving force for producers is to get consumers to this point of addiction. The terms one finds in a typical investor presentation might be much softer such as engagement or stickiness of the product. However, the intent is clear and even impartial (without malice).

Indeed, most products do not reach the point of the classification of addiction. Addiction is the state where consumers desire the product in an involuntary manner and without regard to the consequences. Most products (cars, cleaning detergent) do not have the kind of direct access to the human brain required for inducing addiction. However, over history several products have reached this point and the result has been quite destructive to civil society.

Category One: Highly Addictive Drugs

The first category of such products consists of highly addictive drugs such as opium, heroin, and morphine. These constituted the first threat to civil society, and perhaps the first commercial entity which drove this process was the British East India Company when it set up the colonial-era opium supply to Europe and East Asia. They even suppressed the public policy response in China with the well known “opium wars.”

In the US through the 1800’s, the combination of the invention of morphine with the hypodermic needle created a compelling product. This product was sold commercially by companies such as Sears Roebuck & Co through their famous catalog. The American Civil War triggered a spike in usage, and the term “Soldier's disease” became well known for veterans addicted to pain-killing drugs (sound familiar?). For many years, these narcotics were an active ingredient in an array of unregulated products...including the use of cocaine in Coca-Cola [ref].

Gradually, the public policy impact of these drugs started to filter through the medical literature and led to a government response with cities like San Francisco instituting ordinances to prevent the spread of opium dens. The US federal government started taxing opium in 1890 and with the Pure Food and Drug Act of 1906, manufacturers were forced to disclose the contents of their products. In 1909, the Opium Exclusion Act banned the import of Opium for smoking purposes. Led by Roosevelt, the International Opium Commission was formed to regulate the drug internationally and finally the

Harrison Narcotics Tax Act of 1914 highly regulated these drugs. All of these public policy responses were effective in stemming the threat from this category of drugs.

However, the innovation engine in capitalism is difficult to stop. In 1895, a wonder drug which worked phenomenally well as a cough suppressant was released to the market by the German pharmaceutical giant Bayer. It was called heroish in German (Heroic) and marketed as Heroin in the US. It was marketed as an alternative to Morphine and of course flooded the market. Eventually, regulation caught up with Heroin as well. These categories of invention and the public response to the innovation continues to this day with the current crisis with drugs such as OxyContin and Fentanyl. Today, it is estimated over 40k deaths are caused by drug overdoses with an economic cost over $80 Billion [cdc].

Category Two: Addictive Drugs with Cultural Implications

Alcohol and Tobacco are perhaps one of the earliest forms of recreational drugs. Due to the lack of availability of sanitary water throughout most of human history, fermented beverages such as beer and wine were considered viable alternatives. Similarly, ever since its arrival from the new world, tobacco was considered a harmless recreational drug. Over time, both alcohol and tobacco became ingrained into the cultural rituals of their host societies.

On the economics side, tobacco was one of the key cash crops for the American South from the foundation of the Jamestown colony to the big Tobacco companies of today. Tobacco, along with cotton, was one of the key drivers of the slave trade. Today, the size of the tobacco industry is over $125 Billion dollars in sales. Alcohol based products have packed an even bigger punch historically and today the industry is well over $1.5T dollars in size worldwide.

The knowledge of the negative health effects of both products were slow to manifest itself. For alcohol, the public policy response started with the dry state laws (led by Maine in 1851) and eventually with Prohibition in 1919 driven by the temperance movement. However, famously, Prohibition failed as the capitalist response was to take the trade underground and in the process cause an explosion in organized crime. Prohibition was repealed in 1933.

For tobacco, powerful interests fought the science for many years, but with the 1964 report from the Surgeon General, the science was clear. The public policy response to tobacco focused on age restrictions, warning labels, and limitations around second hand smoke. Outright bans were not possible because too many people smoked and they also voted. Perhaps the most seminal public policy event in terms of tobacco was the landmark $365 Billion settlement between the US states and tobacco makers.

Observation 1: It was not possible to impact this category of drugs from a public policy point of view through regulation alone. The drugs were too well integrated into society, and new machinery had to be invented to address these challenges.

With both, the key innovation was the use of social interventions combined with mass education through sophisticated marketing channels. For alcohol, the social intervention was done through the pioneering work of Alcoholics Anonymous and similar 12 step programs. This work was then extended to other fields such as tobacco and even opioid addiction. This social intervention was combined with sophisticated mass media campaigns. In the case of tobacco, this was funded by the lawsuit settlement from the cigarette makers. Today, according to the CDC, though these methods have been reasonably effective, tobacco is still connected to over 480K deaths annually with an economic cost of over $300Billion. Also from the CDC, over 88K/year lives with an economic impact of over $250 Billion can be attributed to alcohol.

Observation 2: Despite the fact that category one is much more addictive, the fundamental scale and impact of category two is quite a bit larger from a public policy point-of-view.

Again, the innovation engine in capitalism is difficult to stop and the frontier today has moved to e-cigarettes.

Category Three: Food or Drug

Nutrition and obesity-related diseases, such as heart disease, cancer, and type 2 diabetes are estimated to contribute approximately **678,000 deaths** each year in the U.S. alone. The size of the food industry is over $2T with the fast food industry alone being $500B. With that, this category is the **largest and fastest growing** in terms of public policy challenges. There are counties in the united states where local hospitals estimate over 70% of the population is considered overweight or obese (Polk county,

FL). Currently, it is the dominant driver of healthcare costs and quality of life while simultaneously impacting the poor disproportionately.

On the regulation side, food has been highly regulated from a safety point-of-view, but nutritional information has been provided through federal guidelines. There is great controversy about the correctness of these guidelines relative to connection to science, and there are accusations of the influence of agribusiness. **However, it does not matter because on the other side of these guidelines is the enormous branding/marketing power of a $2T industry.**

Unlike the previous categories, food and exercise are not easily addressed from a point-of-view of regulation, and by the way, with the scale of absorption of the products, the consuming public are voters as well. Attempts by NYC to regulate soft drinks have been met with accusations of “nanny-state.”

Medical responses to this crisis have had limited success because they are focused on clinical solutions in the context of a problem of behavioral change. The most effective approaches have been commercial offerings such as weight watchers which use many of the key techniques used by the AA programs around social compacts. However, there is no backdrop of context setting (as with Tobacco and Alcohol) as provided through mass media. This makes it very difficult for individuals to stick with good diets because much like water on a stone, brand advertising eventually breaks through at a moment of weakness.

Observation #3: This category of addiction requires a new innovation in public policy with the next generation machinery for treatment.

Finally, we observe that while not at the same scale or health impact of diet/exercise, screen addiction has many of the same properties. It increasingly involves devices which are required for modern life, the application providers focus on capturing attention through “hacking” the human brain, and some percentage of the population becomes addicted. We believe that the methods developed in this proposal can also be used for this malady as well.

Lifestyle Augmentation Treatment Proposal

Architecture of Solution (Category Three):

Our overall architecture is built on the break-through advancements which have been made in the fields of digital marketing, machine learning, and edge devices (cell phones) integrated through the key tenets of programs of social engagement which makes programs such AA successful.

Marketing at its core is the process of communicating a message which excites behavioural action by the customer. Traditionally, the tools of marketing focused on mechanisms through broadcast media (TV, Radio) or physical interactions (billboard, direct mail, newspaper, magazine). These methods were effective but also very expensive due to their inefficient nature of delivery. Because of this expense, public policy solutions were not able to access this powerful source of behavioural change without obtaining funding from the offending industries (eg. tobacco).

Digital marketing platforms have revolutionized the customer engagement process in terms of targeted access. Machine Learning has revolutionized digital marketing in terms of targeting content. The combination has allowed for an order-of-magnitude reduction in cost for accessing targeted markets. In fact, this has been so successful in the political world that criticism has been levied that this process is creating micro eco-chambers which are negative for society.

Our intent is to create micro eco-chambers which are a public good for health.

Finally, edge devices such as cell phones have enabled inexpensive access to the digital world. Further, companies such as Apple and Metronics are increasingly adding health sensory systems (EKG, Exercise monitors, blood glucose detectors, etc) to provide instant access to critical diagnostic information.

Solution Workflow:

Our initial focus for this treatment proposal are individuals which have been identified as “at-risk” by the medical community. In this context, we imagine the patient being given a “prescription” for behavioral change. This “prescription” consists of:

1. Permission to engage with patient on all digital channels (messaging, email, social)
2. Permission to add sensory devices to their edge devices (cell phone)
3. Identification of a core set of important and impactful social connections. The people who care about this patent and who may have impact on the patient (Pteam)
4. Permission to engage with Pteam’s digital networks
5. Permission to engage with patient’s buyer connected accounts (credit card (read only), discount cards) which relate to food consumption. This forms the commercial team (Cteam).

With the above information, the following program can be instituted:

1. Echochamber Creation: An echo chamber can be created through these channels which emphases the key aspects of the behavioural change on a constant and ongoing basis. Engagement can be measured directly and escalated based on Pteam digital engagement.
2. Just-in-Time Prevention Intervention: As the patent travels through their journey, the combination of the edge-devices and machine learning can catch issues and create a prioritized interventions.
3. The Cteam can engage at the information level, at the point of sale offer healthier alternatives, or vendors (meal delivery).

Why Florida Poly ?

Florida Poly is a small STEM university in the state of florida. As a STEM university, the key technologies of this solution around the topics of machine learning, digital marketing, and edge devices are in the core competence of the university faculty and students. As a small university, it can differentially enable projects which require a multidisciplinary approach. Further, the competitive alternatives to solve this problem are often universities connected with hospitals which focus on much more lucrative research contracts with a clinical basis. The state of Florida contains many of the key entities (LRH, Florida Hospital) which are struggling with this problem as well as some of the key enabling partners (Publix).

Also, the members of the Poly Health Engineering Group have unique skills in this space. Dr. Rahul Razdan has built a digital marketing technology company which focuses on using machine learning methods for digitally tracking and messaging with high engagement (HERE). He is also the scientific director for a medical edge-device company focused on applications such as ECG, EKG (HERE).

Finally, most of the new technologies which form of the basis of this solution (social networks, machine learning, edge consumer devices) are most highly absorbed by younger generations, and it is also in this place where Poly's startup faculty have a distinct advantage.

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