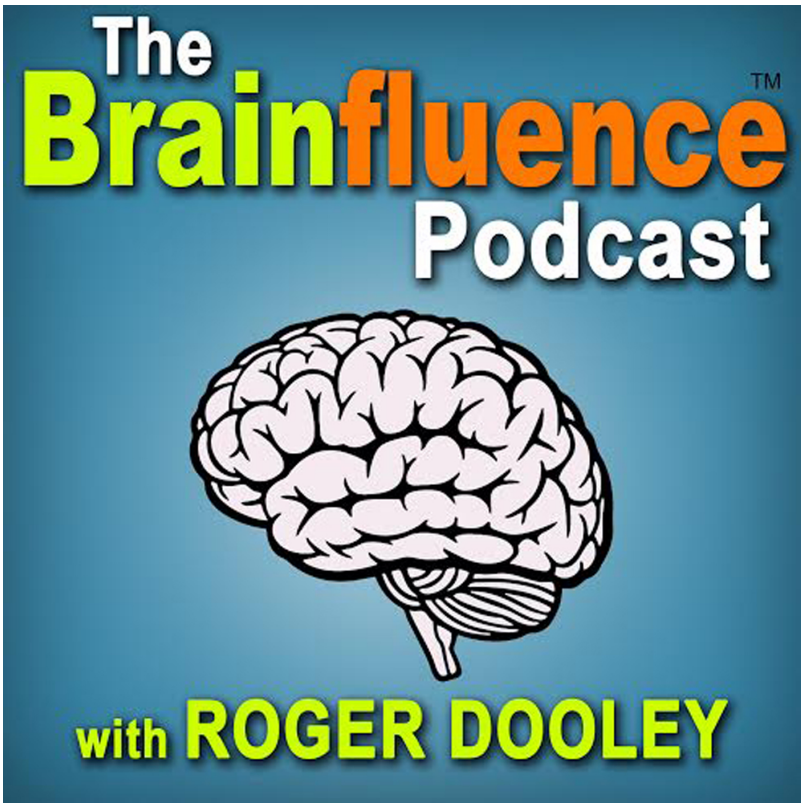
Ep #182: Have Corporations Hacked Our Brains?



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With Your Host

Roger Dooley

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Welcome to the Brainfluence Podcast with Roger Dooley, author, speaker and educator on neuromarketing and the psychology of persuasion. Every week, we talk with thought leaders that will help you improve your influence with factual evidence and concrete research. Introducing your host, Roger Dooley.

Roger: Welcome to The Brainfluence Podcast. I'm Roger Dooley. Many of our sessions here are from behavior scientists or similar experts, teaching marketers and business people how to market to their customers' brains more effectively. That's the major focus of my writing and speaking, but something I emphasize is that it's important to use this knowledge in an ethical way. Our guest today is going to explain why he thinks that some companies are a little too effective today in creating products that hijack their customers' neurochemistry. Dr. Robert Lustig is an MD, a professor of pediatrics and a member of The Institute for Health Policy Studies at The University of California San Francisco. He's an obesity expert and the author of the New York Times Best Seller, "Fat Chance". His new book is "The Hacking of the American Mind: The Science Behind the Corporate Takeover of Our Bodies and Our Brains". Welcome to the show, Rob.

Robert: Thank you very much for having me, Roger. I appreciate it.

Roger: Yep. Rob, the basic thesis of your book is that foods and also other products can be habit-forming because of the way they act on the body's chemistry. In your book, one of the more amusing anecdotes I thought was the origin story of Coca-Cola, which as far as I know, you're not going to find on the company website.

Robert: No, you're not.

Roger: Why don't you explain that?

Robert: Well this is a perfect example of how substances can ultimately be marketed for the good of the company, but not necessarily to your benefit. This guy was named John Pemberton. He was an Atlanta pharmacist. The reason he became a pharmacist was because he was wounded in the Civil War. He never did get over his pain and his ability to procure morphine was enhanced by his trade. He was basically skimming off a little bit of morphine from everybody else and keeping himself hooked over many, many years. He saw that it was affecting his life, his family, his business. He endeavored to try to figure out a way to get off his morphine addiction, so he ended up concocting a cocktail, indeed, of cocaine, alcohol, caffeine and sugar, all four of which are hedonic substances.

Roger: All the major food groups.

Robert: Absolutely. Mixed it with carbonated water, which at that time was thought to have some health promoting properties because of the Perrier Spa in France, but of course the only place you could actually pressurize carbon dioxide into a fluid was in a drugstore. That of course accounted for the advent of the soda fountain. Lo and behold, he came up with this creation that he termed Coca-Cola for all the reasons you know. Well in 1888, two years after its invention, John Pemberton sold the formula of this drink to a gentleman by the name of Asa Candler for a total of $2,500. You would say, "Why so little?" The answer was because it didn't work to get Pemberton off his heroin addiction. He ended up dying broke, penniless, addicted and he died that same year. That's the part of the story they don't want you to know.

Roger: Yeah, I think I've always seen this image of a friendly, sort of bespectacled pharmacist who had a soda fountain, created this great, tasty little concoction for his customers. It's a good myth.

Robert: Not exactly. Not exactly. The point is that what he was attempting to do with that concoction was what we commonly refer to now as addiction transfer. As you know, people who stop smoking, start eating, people who stop drinking, start eating. Some people who had bariatric surgery start drinking, like Carnie Wilson did that. Became an alcoholic after her bariatric surgery. The point is that there's one area of the brain called the reward center. It's also known as the nucleus accumbens. The neurotransmitter that activates this reward center is called dopamine. It turns out that that reward pathway is the same no matter what the substance or the behavior. They're all the same. It doesn't matter if it's tobacco, alcohol, cocaine, nicotine, heroin, sugar or behaviors. Shopping, internet, social media, gambling, porn. Makes no difference. They all work through the same reward system. This concept of addiction transfer happens quite a bit.

Roger: Right. It's unfortunate in that case it didn't work out perhaps, but he certainly did hook multiple generations of other folks on it. Although now it's lost two of those key ingredients though, right? They had to get rid of the alcohol and the cocaine both.

Robert: That's right. In 1903, the FDA basically said, "You want to sell this to people, you have to get rid of the cocaine and the alcohol." They were left with caffeine and sugar. Well I guess caffeine and sugar together are enough of an addiction because look what's happened worldwide.

Roger: Right. Of course, you can still get a rum and coke or a jack and coke if you want to try getting closer to the original, but most places you can't order a coke and coke yet, I guess.

Robert: No. The point is that there was this concoction called Four Loko, which was alcohol and caffeine and caused arrhythmias and caused several deaths. That's now outlawed. All I can say is be careful about what you drink.

Roger: Yeah. Rob, one quote that jolted me was this one. I'll read it here. It's your saying, "I don't see behavior or emotion. Rather I see neuro pathways. It's the point of the book to get you to see them, too." Rob, what do you mean by that? We're most interested in behavior and behavior change. Even if Newton had known that a metal ball is made up of protons, neutrons and electrons and probably a bunch of other stuff, that wouldn't have really helped him describe what happens when you drop the ball off a balcony. Why is it important to understand the nuts and bolts here?

Robert: Absolutely. Every thought is the phosphorylation of a protein. You can't have a thought without some neurochemistry going on inside your brain. Your thoughts are your own and I don't argue that. I don't have the same thoughts as you do. However, the process of emotion generation is shared amongst all humans. Everyone basically gets the same emotions and through the same neuro pathways. Understanding how they work and what can alter them is actually quite important because if you can alter them, you can alter emotion. Well, duh. That's what SSRIs ... You know, selective serotonin reuptake inhibitors do for depression. Understanding how and why these emotions occur and what you can do to potentially intervene when there's a problem is the hallmark of behavioral medicine.

Roger: Rob, most of our listeners have probably at least a top-level understanding of the brain's reward system, but you described three pathways or three main pathways in the book. What are they?

Robert: These are all pathways involved in what we call the limbic system, which we in the vernacular call the emotional brain. There are three. One is called the reward pathway. That is primarily mediated by dopamine and the cell bodies are in one place and the nucleus accumbens is where they work. Now the

thing about dopamine that's important to this story is that it excites neurons. Now neurons like to be excited. That's why they have receptors for those neurotransmitters, but they like to be tickled, not bludgeoned. Chronic overstimulation of neurons leads to cell death. The neurons have a defense mechanism against dying. What they do is they down regulate the receptor.

Now that's important because as most of you I'm sure know, you get a hit, you get a rush. Well then the receptors go down. Well then the next time, you need a bigger hit to get the same rush because there are fewer receptors to occupy. Then the next time, a bigger hit and a bigger hit and a bigger hit and a bigger hit until finally you need a huge hit to get nothing. That phenomenon is called tolerance. Then when the neurons actually start to die, that's called addiction. Now the goal of course is to stop that, but in order to feel pleasure, you have to have dopamine and you have to have receptors. Now there's a second pathway called the contentment pathway. It is primarily mediated by the neurotransmitter serotonin. Now this comes from a different part of the brain, activates the entire cortex. The targets are very different for the contentment pathway, but there is an interaction between dopamine and serotonin, which we'll get to in a minute.

Then there's the third pathway, which is ... I call it the stress fear memory pathway. There are four parts of the brain that are involved here. One is called the amygdala, which is your fear center. It's the part that goes, "Gang busters!" when you walk down a deserted street at three o'clock in the morning. The hippocampus, which is your memory center. When you put your hand on the hot stove when you were three years old, you still remember that and you won't do it again. That's information that is stored in your hippocampus. Then finally, there's an area of your brain right between your eyes, behind your forehead, called the prefrontal cortex. That is the executive function part

of the brain, if you will, your Jiminy Cricket that basically says, "Don't do stupid things because it'll only get you in trouble."

Well it turns out that dopamine serotonin and that prefrontal cortex are intimately related. What we have learned through neuroimaging and through neurochemistry and also through clinical trials is that dopamine down regulates serotonin. In other words, the more pleasure you seek, the more unhappy you get. Then throw a little stress on top of that and you basically either sail into addiction from the dopamine excess or depression from the serotonin deficiency. Our current addiction and depression crises in the United States, and it's truly around the world, can be traced back to this dopamine serotonin cortisol stress hormone interaction. That is the nature of the science in the book.

Roger: Rob, do you think businesses mainly focus on the reward pathway or are they also working on these other areas too?

Robert: Well the reason for the title of the book, the science behind the book or takeover of our body and brains is because business has made a conscious decision. Now each company does it themselves. It's not a conspiracy to collude between corporations specifically to addict and defraud the American public. That's not the purpose. I have no data to suggest that there is a conspiracy, but it is certainly a plot that each company engages in themselves. The argument in the book is that business has confused and conflated the two concepts of pleasure and happiness so that you don't know the difference between them.

I'm going to ask your audience right now, think of one difference between pleasure and happiness. Pretty much everybody comes up with the same line. Pleasure is short-lived. Happiness is long-lived. That's absolutely true, but there are six more. Pleasure is visceral. You feel it in your body. Happiness

is ethereal. You feel it above the neck. Pleasure is taking. Happiness is giving. Pleasure can be achieved with substances. Happiness cannot be achieved with substances. Pleasure is experienced alone. Happiness is usually experienced in social groups. The extremes of pleasure, whether they be behaviors or substances, doesn't matter. All lead to addiction in the extreme whereas there's no such thing as being addicted to too much happiness. Then finally, number seven, pleasure is dopamine and happiness is serotonin. By confusing pleasure with happiness and making you not realize the difference, corporations are able to sell you stuff that ultimately makes you unhappy, but gets you to buy more. It's called the American economy.

Roger: Right. Rob, let me play devil's advocate. I think that if you, say, somebody put me in charge of a failing restaurant ... I don't know anything about that business, but what I would probably do is take a look at the menu and see what was selling, what wasn't. Probably double down on the things that were selling better and change the ones that weren't. I might look at the competition, see what they were selling effectively that I could tell and ultimately I think that probably by going through an iteration process until I had increased sales enough so that the restaurant was going to survive, I think I'd probably end up with bacon cheeseburgers and glazed donuts, not kale salad with steamed broccoli. I think if you do taste tests, if you see what sells, people drive the business. I don't know. I'm not in the inter sanctum at McDonald's or any of the big food makers, but somehow I don't know that they're looking at the neural pathways so much as just trying to figure out what they can sell and do a better job with than the competition.

Robert: Well actually, I would disagree with you completely. The industry in general has two separate mantras, okay? "We give the public what it wants." That's your suggestion, which is

ostensibly true. Then there's, "If you build it, they will come," which is also true. In fact, they use both. There are flavorists and there are scientists working for all of these companies very specifically to get you to buy more stuff. It's actually outlined very nicely in Michael Morris's book, "Salt Sugar Fat: How the Food Giants Hooked Us". It goes even further than that because they are now using neuro marketing in order to basically cater their marketing pitches very specifically to you by reading your facial expressions while you're at the grocery store and altering on the fly the messages that you will receive based on how you interact with scanners and closed circuit TVs and many other things that go on within the supermarket today. That's not by accident. This is a very well thought out process and the data exists for how this works. It's in several books, one called "Hooked: How to Build Habit-Forming Products".

Roger: Right. Nir Eyal is a friend of mine and he's been a guest on the show a couple of times. He focuses mainly on electronic stuff, but you can certainly apply that general model to other kinds of products as well.

Robert: Well so let's bring it back to food because that's where my sweet spot is, anyway. Pun intended. What is the cheapest of thrills? What is the pleasure everyone can afford?

Roger: Sugar.

Robert: Yep. Once upon a time, back in the 1400s, 1500s, sugar was more expensive than gold. Sugar was fetishized. There are sculptures made of sugar in museums today from the 1400s, 1500s. You see these elaborate pastry chefs making these sugar sculptures even today. This was a big deal way back when. It was only for kings. Well today, all you need is a quarter or a grandmother and pleasure is yours. Pleasure used to be kind of hard to get. There was alcohol, but you couldn't even get much alcohol until we could distill it and purify it with the pot

still in the 1700s. Before that, it was just beer and most of it went bad or wine. Most of it went bad also because you couldn't get the alcohol content up high enough to be a preservative. Once you could distill it, that's when the problem started.

The very first legislation about alcohol dates back to 1736, having to do with gin being made in England. Opium. You know, opium has been around as a medicinal since the dawn of men, but it wasn't until 1000 A.D. that we actually saw the first abuse of opium. Then about 500 years ago was the creation of things like opium dens in Asia and it started being transported to Europe. It was hard to find substances and behaviors for that matter that provided, shall we say, immediate gratification and pleasure. Now it's 24/7, 365. It's either in your mouth or in your pocket. You've got a slot machine in your pocket right now.

Roger: Yeah. That's definitely the case. Of course that's a lot of what Nir has written about in his book. He, too, advocates an ethical use of this knowledge to the extent that one can control that. Once knowledge is out there, you don't really know how it's going to be used.

Robert: Well, indeed. The question is not do cellphones bring pleasure? That's well-described. The question is does that interaction with your cellphone ultimately prove to drive unhappiness and depression? The data are now coming in on that. The answer is without question an unequivocal yes. That's what the book is about. The book is about the dark underbelly of this cultural phenomenon of instant gratification that we have basically surrounded ourselves with in part because we like it and mostly in part because businesses have figured out how to capitalize on it.

Roger: Yeah. I know I just saw a study about Facebook usage and depressions. It seems like there's an inverse relationship between the two, although I don't know that they established

cause and effect. It's possible that depressed people hang out on Facebook more, but you can certainly see how that would work just because people tend to post the best side of themselves. If you keep comparing yourselves to your friends, they're all having a great time at a beautiful restaurant or capturing a sunset that's gorgeous. You're seeing their highlight reel. By comparison, your life seems kind of boring because you've got just a few of those highlights.

Robert: Well if that were just the case and all we had was correlation, then everything you said would be exactly right. In other words, is it that Facebook causes depression or is it that depressed people use Facebook? We have better now. We have the time lag analysis data of individual people to see what Facebook does to their emotional state over time. The answer is it makes people unhappy in real time. We actually now know based on neuroimaging, based on functional FMRI, based on biochemicals in the brain and PET scanning what is actually going on in the brain and it ain't good.

Roger: Rob, I have to admit, jumping back to food for a second, the Krispy Kreme donut is probably the most effective delivery mechanism for ingredients that light up your brain. I own some stock in a company that really bet big on bagels. They were a franchise type company and the bagel investment was a disaster for them. If you look at that compared to Krispy Kreme, you can understand why. You can only eat one bagel. They're not typically loaded with sugar and fat, but you put a box of Krispy Kremes in the middle of a table and people are just going to keep eating those until they're gone. Then they're probably going to go try hunting down some more. It's not about hunger. It's that it's such a hedonic experience that people want more.

Robert: Exactly. Plus the sugar that's in that Krispy Kreme donut does not lower your hunger signal. For instance, if you give a kid a can of soda and then let them loose at the fast food restaurant, do they eat less or do they eat more?

Roger: Oh, you tell me.

Robert: It turns out they eat more. They eat more. Now they took on 150 calories in that can of soda. Shouldn't those calories do something to quell their hunger? The answer is absolutely not because the hunger hormone that comes from the stomach is not affected by sugar. Basically you keep eating.

Roger: Yeah. I always thought that a smart thing, perhaps in an evil sense, that Krispy Kreme did and I guess still does ... I don't have one close to me, but perhaps that's a good thing was offer free samples. A free donut when their neon sign is lit. To me, that's like the neighborhood crack dealer hanging out on the corner, handing out free drug samples to get people hooked. It's great and fun in one sense, but it's diabolical in another sense.

Robert: Well, indeed. The fact of the matter is everyone's a pusher now, including your grandma. They think they're doing good. They think they're doing the right thing. This becomes a huge problem. We also know that there are significant alterations in behavior because of sugar consumption, especially in kids. We have data on aggressive behavior in toddlers. We have data on violent behavior in middle schoolers. We also have data on A.D.D.-like symptoms in people in college. In addition, we see A.D.D. symptoms from cellphones. Now people say, "Well that's because the cellphone is distracting them." Well there was a study that was just done recently where they had kids write an essay with the cellphone either on the table, switched off, or not on the table.

Now on the table, switched off, means that the cellphone is not going to go off, okay? The people who were writing the essay knew that. It took them three times as long to write the essay because of the distraction of it even existing, nevermind that it was going off and distracting your brain. People think that they can multitask. Multitasking turns out to be smoke and mirrors for 97.5% of the population. All it does is stress you, raise your cortisol and make you sick.

Roger: Yeah. Rob, beyond food and electronics, what other kinds of business do you see taking over their customers' brains?

Robert: Well certainly cellphones and social media are huge examples of this. Substances, obviously. The ones that I've mentioned. Sugar, cocaine, tobacco, alcohol. The ones we've already discussed. There are other hedonic substances as well. For instance, gasoline is a hedonic substance. It's treated as such. You'll notice that when gas prices go up, people still buy gas. The oil industry has figured that out. Now there ultimately comes a point at which time you actually don't buy gas and you actually do cut back. For instance, when we were in California, gas about two years ago went to five dollars a gallon. You actually did see people cutting back. That's when the sale of Teslas started going up too because nobody wanted to deal with that.

The fact of the matter is gasoline is relatively price inelastic. That is that raising the price doesn't change the consumption all that much. The reason is because it's a hedonic substance. If you look at the U.S. economy, if you look at gross domestic product and you look at specific substances that are within our gross domestic product, hedonic substances are numbers one, three, five, seven and nine. Our entire economy is built on hedonic substances of one form or another.

Roger: Well in the case of gasoline, couldn't you just say that the price is inelastic because it's almost like a utility? In other words, a lot of it goes into commuting to work and a small change isn't really going to affect your commuting habits. It's not going to affect whether you drive to the restaurant or the movie or something like that either. Maybe it won't even affect your driving over to the next state to see your Aunt Ethel. Aunt Ethel. That was a Freudian connection there, I guess. Obviously if it really gets high, then people do start carpooling or saying, "Well I'm not going to go see Aunt Ethel this year."

Robert: Well since you bring that up, you said it's a utility. Well the fact is we do have public utilities and they are usually subsidized by federal governments very specifically because they are necessary. For instance, electricity and water. Some places make you pay, but the bottom line is they are very specifically subsidized by governments so that people have access to them so that they don't have to suffer. Gasoline does not fit under that rubric. It is actually treated as a hedonic substance rather than as a utility, in part because the industry can afford to.

Roger: Yeah. I should see our utilities here in Austin. I'm not sure that I'd agree that we're benefiting from subsidies. In fact, sometimes I think we're subsidizing other activities with our bill. Anyway, what overall, Rob, what direction do you think we're headed in as a society? Are things getting better, worse? Do you see the tide turning at all or are you not very optimistic?

Robert: Well I will tell you, I think that we have a significant problem in this country, in part because of this issue of not being able to differentiate pleasure from happiness and thinking that pleasure is happiness and therefore doing the wrong thing. I'm very particularly worried about it for children. It seems that children are ... Because their brains are so plastic, that means they are even more vulnerable to these insults, as minor as you think

they might be, than adults are. That's actually part of the reason why we're seeing obesity and metabolic diseases now in children that were really only reserved for adults. We're seeing all of this A.D.D. coming about from the kids who basically grew up in the computer age. A.D.D. was not nearly as big a problem.

I remember the first time I ever had a grand rounds on A.D.D. as a physician. It was 1982. Now think about it, where 25% of all the children in America have been diagnosed with A.D.D., including my own. This is a big problem and the question of course is what happened to ferment this problem? It very well in fact based on the data we have is likely at least in part due to our electronic world.

Roger: Well that's a pretty good place to wrap up. Let me remind our listeners that we are speaking with Robert Lustig, author of "The Hacking of the American Mind: The Science Behind the Corporate Takeover of Our Bodies and Our Brains". Rob, how can our listeners find you and your work online?

Robert: Well I have a website for myself. It's robertlustig.com. You can certainly find a lot of information there. You can go to profiles.ucsf.edu to look at my academic work. I am also the chief science officer of a nonprofit called Eat REAL. REAL is an acronym. Responsible Epicurean and Agricultural Leadership. We have developed a trust mark for restaurants that if you see a green fork in the window of a restaurant, you know that when you eat at this restaurant, it won't kill you.

Roger: Great stuff. As always, those links will be on the show notes page at rogerdooley.com/podcast along with links to any other resources we mentioned. There will be a text version of our conversation there, too. Rob, thanks for being on the show.

Ep #182: Have Corporations Hacked Our Brains?

Robert: Thank you so much. Everyone, go out and buy "The Hacking of the American Mind". Believe me, you'll be better off for it.

Thank you for joining me for this episode of the Brainfluence Podcast. To continue the discussion and to find your own path to brainy success, please visit us at RogerDooley.com.