

ATTUALITÀ

The triumph of doubt: Dark Money and the Science of Deception

Il trionfo del dubbio: denaro sporco e scienza dell'inganno

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I wrote "The Triumph of Doubt: Dark Money and the Science of Deception"¹ because

it has become clear to me that the strategy used by the tobacco industry to manufacture uncertainty about the harms of cigarette smoking has become standard operating procedure for corporate leaders across the globe. When faced with the possibility that their products or activities are harming people, firms in every sort of industry – from food to liquor to automobiles to energy – take the tobacco road: they hire scientists who specialize in manufacturing doubt in order to delay public health protections or defeat law suits of victims.

I had written about this problem a decade ago in the book *Doubt is their Product: How Industry's Assault on Science Threatens Your Health*,² before I took a leave from my faculty position at the George Washington School of Public Health to direct the Occupational Safety and Health Administration for President Obama. Running a federal public health agency, I witnessed how corporations hired mercenary scientists to oppose public health protections. One example of this is the effort made by the chemical industry to question the epidemiologic evidence OSHA used to issue a strengthened standard to protect workers exposed to respirable silica, an exposure which increases risk of silicosis and lung cancer.

After I left OSHA and returned to George Washington University when President Trump was inaugurated, I began research on the ways this strategy was being used by more industries, and, as the book shows, it has become "standard operating procedure" for corporations in many sectors of the economy.

In addition, it became very clear to me that the Trump Administration was embracing the questionable science produced by these industries. Most alarmingly, I saw that mercenary scientists who at one time were hired to attempt to influence government agencies were now being brought in by the Trump Administration to run those same agencies.

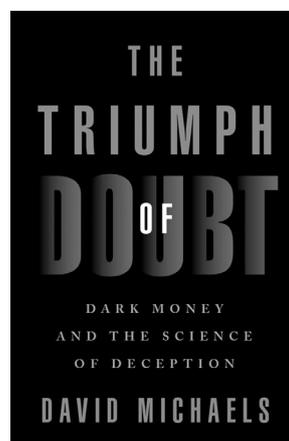
The pressure for profits and growth has led to many corporations embracing the tobacco industry's denial playbook, and in the book, I detail many examples of this behaviour. Manufacturers of diesel engines joined fossil fuel companies to sponsor repeated critiques and reanalyses of studies that found diesel engine emission particulates increased lung cancer risk. Similarly, Volkswagen bankrolled efforts to dispute studies that documented the deleterious impact of diesel pollution on human health – at the same time that it secretly installed "defeat devices" to fool auto emissions testing systems into underestimating the pollution emitted by its cars' diesel engines. Battery manufacturers and smelters employ consultants to question the studies on the impact of low-levels of lead exposure to children. ExxonMobil and other fossil fuel firms employ many of these same consultants to claim that the evidence of the health effects of air pollutants like ozone is too uncertain to use to in setting regulatory limits. Years

ago, scientists at these same corporations actually modeled the impact of atmospheric carbon accumulation and predicted much of the climate crisis we are seeing today, but that did not stop them from funding the climate change denial machine. Even the US National Football League, following initial reports of concussion-related brain injury among its players, took the tobacco road. It appointed an "expert" committee stacked with members conflicted by financial ties to the teams, and did its best to discredit the accumulating evidence, enabling the league to delay addressing the problem for a decade.

The same scientists, and particularly the same product defense consulting firms, appear over and over and over again, proclaiming that the amount of uncertainty in the evidence of the toxicity of PFAS, or sugar-sweetened beverages, or certain pesticides, or talc contaminated with asbestos, is so great it would be wrong or premature for the government to take action to protect the public's health. The

work of these scientists is often published in the peer-review journals they control and supply the peer-reviewers. No one should be surprised by a study conducted by a for-profit product defense consulting firm on behalf of a corporation that makes a product which asserts there is not sufficient evidence to conclude that product is harmful at the current levels of exposure. The business model of these consulting firms is to provide their corporate customers with studies they can use to oppose regulation or defeat litigation – if they failed to provide these products, the consulting firms would go out of business.

I understand the dilemma facing the corporate leaders who hire product defense scientists. They will never say they



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ATTUALITÀ

value profits before the health of their employees or the safety of the public, or that they care less about our food and water and air than environmentalists do. But decision-makers atop today's corporate structures are responsible for delivering short-term financial returns to investors, and in the pursuit of these goals a certain dissonance creeps in: profits and growth above all else.

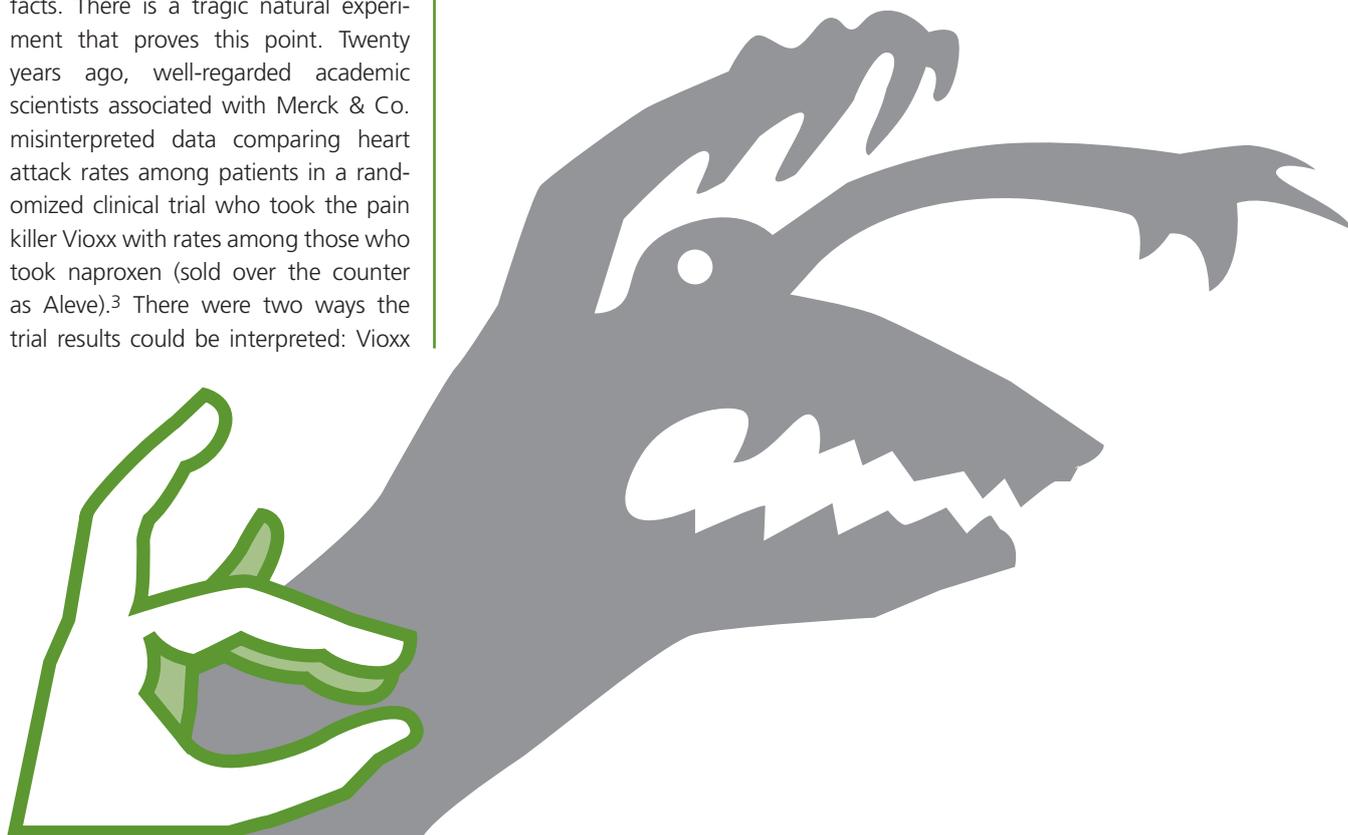
When allegations of harm arise, corporate executives face both financial and psychological challenges. It is certainly difficult to consider ending a successful product or activity. But taking steps to investigate the actual consequences of exposure can be problematic from a legal perspective: knowing that one of your products or services causes harm and then continuing to market it may pose a greater financial risk than not knowing at all. Commissioning studies that dispute the evidence is the best protection for the bottom line, no matter what the truth actually is.

Further, it is difficult for most of us to acknowledge that something we do harms others, and confirmation bias helps us miss even the most obvious facts. There is a tragic natural experiment that proves this point. Twenty years ago, well-regarded academic scientists associated with Merck & Co. misinterpreted data comparing heart attack rates among patients in a randomized clinical trial who took the pain killer Vioxx with rates among those who took naproxen (sold over the counter as Aleve).³ There were two ways the trial results could be interpreted: Vioxx

more than doubled heart attack risk or naproxen lowered it by more than 50%. Academic scientists paid by Merck chose the latter, even though there is no drug known to be anywhere nearly that effective in reducing heart attack risk.^{4,5} Not long afterwards, the truth became clear and undebatable. A different study, in this case comparing Vioxx to a placebo, confirmed that Vioxx greatly increased heart attack risk. Even before this study could be completed, the results were so compelling that Merck voluntarily withdrew Vioxx from the market. FDA scientists estimated that in the four years the drug was on the market, it caused between 88,000 and 140,000 heart attacks.⁶ How did respected university-based cardiology experts get it so wrong? As Upton Sinclair famously said, "It is difficult to get a man to understand something when his salary depends upon his not understanding it." In many cases, the data are much more equivocal than they were in the Vioxx example, and it is far easier to conclude that the harms of a product are not real, or at least that there is too much uncertainty to reach a conclusion. But

having studied this issue for years, I've found few examples of firms which, in the face of public concern about a potentially dangerous product, said, "Let's hire the best scientists to figure out if the problem is real and then, if it is, stop making this stuff." If a successful product is threatened, the instinct of too many corporations is to take the low road: deny the allegations, defend the product, and question the science underpinning the concerns.

We need new approaches to produce the science necessary to assess the impact of potentially dangerous exposures. One solution worth applying more widely, pioneered in a lawsuit involving PFAS chemicals, most well-known for their use in manufacturing Teflon. For many years, there had been almost no relevant human data on the effects of exposure through drinking water to these "forever chemicals", given this label because their bonds are so strong they last in the environment, and the body, for many years. As part of a legal settlement, the manufacturer DuPont committed to paying for research by a panel of independent



ATTUALITÀ

scientists chosen jointly with the attorneys representing community residents whose water was polluted by chemicals from a DuPont factory. These scientists designed and conducted studies involving thousands of PFAS-exposed residents. In the most important research on PFAS chemicals to date, they found the exposures increased risk of a range of cancers and other conditions.⁷

But while this approach may work in litigation, we need a strategy that develops the needed scientific evidence before people get sick and lawsuits are launched. Firms whose products may be harmful should be required to fund the research necessary to evaluate those concerns. For the studies to

be credible, however, the development of the research agenda, the selection of the investigators and research methods, and the manner in which the results are reported must be independent of the funders. It is the only way

to wrest back truth from the holders of the denial playbook, restore faith in science to safeguard public health, and protect generations to come.

Conflicts of interest: none reported.

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- 7 http://www.c8sciencepanel.org/prob_link.html

E il dubbio continua a trionfare... anche in Italia

Doubts keep on triumphing... also in Italy

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**Sono poche le cose da ag-
giungere** alla presentazione¹ scritta da David Michaels del suo nuovo libro² sull'asservimento di un settore del mondo scientifico (numericamente limitato, ma socialmente ed economicamente significativo) a interessi diversi da quello della produzione di conoscenza. L'asservimento è mediato dalla distorsione intenzionale del disegno degli studi e/o dalla parzialità nell'interpretazione dei risultati. L'Italia non fa eccezione e anche qui le vie della "scienza per la difesa del prodotto" sono molteplici. A pagina 247, Michaels descrive gli aspetti cruciali di un emblematico episodio editoriale che ha coinvolto due italiani:³ un testo sottoposto a una *peer-review* fatta in casa e una precipitosa decisione di pubblicare da parte del direttore della rivista, ma anche citazioni bibliografiche incomplete o distorte, nonché una falsa

dichiarazione di mancanza di conflitti di interesse e un millantato vanto, non dovuto, di un riconoscimento di valore scientifico e di un finanziamento da parte di una agenzia prestigiosa come l'Associazione italiana per la ricerca sul cancro (AIRC). A suo tempo, AIRC ha deplorato – senza pubblicità – l'episodio che gli era stato segnalato dalle vittime della Eternit di Casale Monferrato.

Michaels mostra come il più diffuso strumento utilizzato dalla scienza per la difesa del prodotto sia la fabbricazione del dubbio. I destinatari sono gli operatori della politica e quelli della giustizia (oltre naturalmente all'opinione pubblica e ai media). Nelle aule dei tribunali, dove vige il principio del *in dubio pro reo*, dalle inevitabili incertezze residue degli studi epidemiologici si spremono sistematicamente spunti per convincere i giudici che "non vi è sufficiente evidenza" delle

responsabilità degli imputati nella generazione delle malattie delle parti civili. A livello politico, si intende mettere un alibi a disposizione dei governi per scelte legislative permissive in tema di sicurezza occupazionale e ambientale. Purtroppo, quanto magistrati e politici riescano a riconoscere le distorsioni della scienza al servizio del prodotto è problematico. Perfino Elena Cattaneo, senatrice a vita e ricercatrice di prestigio, non ha considerato che il discredito sulla Agenzia internazionale per la ricerca sul cancro (IARC) per la sua valutazione dei rischi di cancerogenicità del glifosato facesse parte di una strategia artatamente fabbricata dalla Monsanto,⁴ ignorando le documentate smentite da parte della direzione dell'Agenzia stessa.⁵ Nel mondo reale è difficile percepire le modalità con cui la scienza al servizio del prodotto riesce a filtrare attraverso il mondo dell'editoria scientifica. Negli scorsi decenni, nelle revisioni sistematiche della letteratura, un'associazione tra natura del finanziamento (pubblico o privato) di uno studio tossicologico o epidemiologico e risultati dello studio stesso (pericolosità o innocuità di una data esposizione o di un dato agente) è stata rilevata in più contesti, a partire dagli effetti del fumo passivo.⁶ In una