Regulating disruptive technologies – three papers

written by Clive Bates | 16 October 2015



In 2013, Goldman Sachs declared e-cigarettes to be a disruptive technology: the search for creative destruction

> ***Eight Disruptive Themes***
>
> *(1) E-cigarettes: The potential to transform the tobacco industry. Imagine a product that is possibly >99% less harmful than cigarettes, delivers a similar use experience and offers a better economic bargain— this is the proposition of electronic cigarettes (e-cigs). We believe e-cigs have the potential to alter the status quo of the US tobacco market and accelerate the volume decline of traditional cigarettes.*

But what does the academic literature tell us about regulating disruptive new technologies like e-cigarettes, heated tobacco products or novel nicotine products? If you want to get beyond zealous proposals for outright bans, crude restrictions and gratuitous burdens you will need to bypass the health journals and consult scholarship in academic law journals. Here are three paper that offer useful insights – none deal explicitly with tobacco or nicotine. Sadly, there is little sign that these insights have been grasped by FDA, the European Union or WHO.

1. Agency threats

Tim Wu, *Agency Threats*, 60 DUKE L.J. 1841 (2011) [link]

> *There are three main ways in which agencies regulate: rulemaking; adjudication; and informal tools of guidance, also called nonlegislative or interpretative rules. Over the last two decades agencies have increasingly favored the use of the last of these three, which can include statements of best practices, interpretative guides, private warning letters, and press releases.*

Wu argues that non-legislative measures, specifically *threats*, are valuable tools for regulators facing new industries or technologies where there are are still many unknowns.

> *Threat regimes, I suggest, are important and are best justified when the industry is undergoing rapid change—under conditions of "high uncertainty." Highly informal regimes are most useful, that is, when the agency faces a problem in an environment in which facts are highly unclear and evolving. Examples include periods surrounding a newly invented technology or business model, or a practice about which little is known. Conversely, in mature, settled industries, use of informal procedures is much harder to justify.*

2. Regulating disruptive innovation

Nathan Cortez, *Regulating Disruptive Innovation*, 29 Berkeley Tech. L.J. (2014). [link]

This article takes a more sceptical view of the use of threats, noting that they can fail in some circumstances (the software in radiotherapy machines, is an example), but nevertheless embraces the need for a flexible regime when a new technology is emerging.

> *This Article argues that agencies need not be so tentative with innovations. If agencies are concerned about regulating prematurely or in error, then they can experiment with timing rules, alternative enforcement mechanisms, and other variations on traditional interventions. If agencies do choose to proceed by making threats, then they should use them as a short-term precursor to more*

decisive, legally binding action, as the FCC did, and avoid relying on them as a long-term crutch, as the FDA did

Part IV is the meat and contains a full discussion of "The Regulatory Toolkit for Disruptive Innovations", summarised on p.200.

The regulator thus makes four related types of decisions:

1. ***Timing**: When should the agency intervene, if at all? Does waiting necessarily generate a better informational basis on which to regulate? What are the drawbacks of waiting?*
2. ***Form**: Should the agency regulate via rule, adjudication, guidance, or some alternate form? Given the costs and benefits of each, which best accommodates the uncertainties of the innovation? Does form even matter?*
3. ***Durability**: Should the agency's intervention be permanent, or temporary, or conditional? How long should it endure? And are there ways to better calibrate regulatory interventions to the innovation?*
4. ***Enforcement**: How rigorously should the agency monitor and sanction noncompliance? How much should agencies temper enforcement against novel products, firms, or industries?*

3. Dissonant paradigms and unintended consequences

Donald Labriola, *Dissonant Paradigms and Unintended Consequences: Can (and Should) the Law Save Us from Technology?*, XVI Rich. J.L. & Tech. 1 (2009), [link]

Labriola addresses what he calls "*the thorny controversies that arise when disruptive technology spawns a community whose members share an unprecedented paradigm or business model*" (familiar?).

This article assembles this thesis in three steps. It first synthesizes Thomas Kuhn's observations about paradigm shifts with modern economic and business management theories to create a general model of the large-scale social and economic disruption that accompanies technological innovation. Next, it draws upon principles of behavioral and social psychology to find parallels between

internal conflicts (or "cognitive dissonances") experienced by individuals and those that arise within communities on either side of a paradigm shift. Finally, it asserts that lawmakers, regulators, and the courts must consider the effect of such dissonances when devising legal remedies to controversies created by disruptive innovation.

He argues that disruptive change can't readily be halted – only messed with and delayed (hmmm: snus, anyone?). The interesting addition here is the second stage of this argument – cognitive dissonance. Essentially the challenger and the challenged, the regulator and the regulated, don't see the world the same way and talk past each other.

Industries faced with such challenges often look to the law for help, as do new-technology upstarts that feel bullied by their entrenched competition. But legislatures and the courts have rarely done more than delay the inevitable. One reason has been the all-too-common failure of conventional legal analysis to address the irreconcilable differences between warring factions' basic assumptions, beliefs, and norms of behavior. This article argues that such disparities are functionally similar to the "cognitive dissonances" that behavioral and social psychologists observe in conflicted individuals and synthesizes a dissonance-based analytical model suited to such controversies. It concludes that lawmakers and courts seeking to remedy the social ills caused by technological disruption should consider classical dissonance-reduction strategies used successfully in the social sciences.

From para 71 Labriola presents 'a dozen rules' for addressing these tensions – I have extracted some quotes, not the whole text, from each. Some of these are relevant to disruption in the tobacco/nicotine market. Some are not.

1. *THE HARDER YOU PUSH, THE MORE YOU FAIL: "deterrents are most effective when they inflict the minimal amount of punishment necessary to alter undesired behavior"*
2. *SELL TIME, BUT NOT TOO MUCH: "regulators may best serve the public interest with temporary measures that merely slow a paradigm shift, rather than try to stop it"*
3. *BALANCE THE SCALES OF JUSTICE: "Regulators' highest priority*

should be to facilitate progress. The best way to do this is to ensure that innovative technology is allowed to deliver the greatest benefit to the greatest number. This goal must, however, be tempered by fairness.

4. *UNDERSTAND THE SCOPE OF THE NEED BEFORE TAILORING A CURE: "Despite the urgings of lobbyists and other special interests, lawmakers must consider the imminence and the degree of disruption when deciding how quickly and how forcefully to respond."*
5. *CRYSTALS AND MUD: "The legal system's initial response to an emerging paradigm is generally to shore up old-paradigm statutes through extension, exception, and creative interpretation." […] "obsolete laws may be exploited to suppress innovation or remain on the books long after they have ceased to serve any purpose"*
6. *NEW PARADIGMS CANNOT BE ANTICIPATED: "Pre-emptive strikes on disruptive innovations that exist only in crystal balls are likely to be at best a waste of resources. A better strategy is to monitor early-warning mechanisms that give regulators and affected communities time to forge measured responses to disruption"*
7. *REGULATION MUST ACCOUNT FOR THE NEEDS OF THOSE BEING REGULATED: "Laws and regulations that do not accommodate, or even acknowledge, the needs of the communities they regulate create adversarial, economically inefficient, and ultimately anti-democratic relationships between the governing and the governed."*
8. *SOMETIMES IT IS BEST TO WAIT AND SEE: "Regulators always must ask themselves whether it makes more sense to do nothing than to take steps that could make a bad situation worse"*
9. *BEHAVIOR CAN CHANGE BELIEFS: "While it may be obvious that thoughts can influence behavior, conventional analyses would not predict the opposite to be true."*
10. *PARADIGM SHIFTS PASS A POINT OF NO RETURN: "[lawmakers] generally cannot permanently stop a community from adopting a paradigm that fits its needs and cannot hope for a good outcome by merely giving entrenched industries the power to suppress innovation. Economic forces almost always prevail"*
11. *NOT ALL COGNITIONS ARE CREATED EQUAL: "… remedies undertaken without knowledge of the issues that influence dissonance-reduction choices pose a greater risk of unintended consequences"*
12. *VICARIOUS DISSONANCE: "It is possible for individuals to experience*

> *dissonance by merely observing the undesired consequences of others' behavior. This effect, for better or worse, leverages the effects of remedies imposed on individuals, extending their reach throughout the community."*

This analysis has some value, but it also suffers from a weakness – a tendency to see disruption as a lawless activity… e.g. peer to peer file sharing, in which an incumbent may be illegitimately harmed – eg. through theft of copyrighted material. However, I think there is much to gain from his insights on dissonance – we certainly have plenty of that.

Who is being disrupted?

If you read the literature above, keep in mind that tensions form between an incumbent industry and a disruptive entrant, with both aiming to sway conservative regulators. But who is the incumbent industry in the case of disruption by e-cigarettes?

Tobacco companies? The rise of alternative low-risk nicotine products is certainly disruptive to Big Tobacco's dominant business, the cigarette trade. However, these companies are just about keeping up and adapting through acquisition and innovation and may well survive the disruption, potentially emerging as transformed businesses over the 25 years to 2040 – the horizon we typically discuss for the 'endgame'.

Public health? The most serious disruption is to the business model and belief system of many in the public health establishment, and this is the primary source of dissonance and resistance to change. This well-funded vested interest is fighting like any other incumbent industry facing a challenge to its main business model – prohibitions, controlling rules, punitive taxes, fear campaigns, medicalising the problem. This quite coercive model is challenged by an innovative, private sector, market-based, consumer-driven response, which need have no public sector involvement at all.

No wonder there's tension, incomprehension and dissonance.