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Title: A Primer on Green Technology and Antitrust: The Case of the Electric Car

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Abstract:

This paper, a summary of which was presented to a conference of the Practising Law Institute on Green Technology Law and Business,February 24, 2012, provides a primer on antitrust as likely to be applied to "green" or "clean" technology. It focuses on the concerns an antitrust enforcer might have in reviewing the emerging electric car industry.

Keywords: technology, cartel, monopoly, solar, transportation

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A PRIMER ON GREEN TECHNOLOGY AND ANTITRUST:
The Case of the Electric Car

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Introduction: Moving to a Better Place

In his impressive new volume on the quest for energy, Daniel Yergin writes, "Perhaps more than any other technology, the electric car represents a stark alternative road to the future for the global energy system."[1]

In this light, one of the most exciting greentech innovations currently under way is the effort in Israel to displace the oil monopoly with an electronic car. Led by a young entrepreneur named Shai Agassi, a company called Better Place is working on development of a system along with the auto manufacturer Renault, that is based on exchangeable batteries.[2] You, the consumer, will buy a relatively inexpensive electric car that has no internal combustion engine, but is instead driven by a battery that can be recharged at night or switched in a matter of five minutes or less at a networked switching station similar to a carwash. Better Place will own the battery, for which you will pay a monthly fee. In effect, you will purchase mileage as needed from Better Place rather than gasoline from an oil company.

If Better Place succeeds, the air will be substantially cleaner, transportation will be substantially less expensive, and the economic and political power of OPEC will be substantially diminished. One hundred thousand cars have already been pre-sold.[3] There is good reason to think this revolution can take place. Indeed, after Israel is networked, next in line is Denmark and then Australia.

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[1] Daniel Yergin, The Quest: Energy, Security, and the Remaking of the Modern World 688 (2011).
[2] A description of the founding of Better Place may be found in Dan Senor & Saul Singer, Start Up Nation, The Story of Israel's Economic Miracle 1-11 (2009).
[3] Michael Granoff, Head of Oil Independence Policies for Better Place, Speech at Conference on Israeli Innovation in Greentech at American University (Feb. 7, 2012).

Time out. What does this have to do with antitrust? Stick around. First, let's walk through a very brief primer on antitrust.[4]

A Quick Drive in the Antitrust Lane

What we call antitrust in the U.S. is essentially three relatively old statutes, the Sherman Act, the Clayton Act, and the Federal Trade Commission Act.[5] What these do, cumulatively, is make it illegal to engage in behavior that is anticompetitive. We'll go into more detail in the course of this discussion on what this word "anticompetitive" can mean.

There are several institutions that drive antitrust. You should know that the relevant federal agencies are the Antitrust Division of the Department of Justice and the Federal Trade Commission and that they are subject to overruling by the federal courts. In addition, virtually every state has an antitrust law and a staff, sometimes quite small, within the Office of the State Attorney General. But the states often go antitrust hunting in packs, which can make them an important player.

You should also know that antitrust remedies include criminal and civil penalties. People actually go to jail for clear-cut violations like collusion to fix prices. And it is crucial to be aware that at least 90 percent of the antitrust cases are brought not by government but by private parties seeking injunctions and statutory treble damages. These actions can be initiated on behalf of a class, which means that the amount of money at stake in a private enforcement case can be a huge game changer.

One other basic fact you should be aware of: antitrust has become international in a very big way. There are well over one hundred countries with antitrust laws, recently including China, a communist nation in the process of creating "socialist markets," which

[4] "Antitrust has not, up to this point, played a major role in clean tech. This is hardly surprising given that many clean tech sectors are still in the early stages of commercial development. This period of relative antitrust quiet is likely to change over the next three to five years as companies and technologies mature, the distance between successful and unsuccessful market players widens, and competitors and vertically related entities align." Craig Waldman & Margaret Ward, *Antitrust Issues in Clean Technology*, The Antitrust Source, April 2010, at 1.

[5] Respectively, 15 U.S.C. § 1 et seq. (1890), 15 U.S.C. § 12 et seq. (1914), and 45 U.S.C. § 41 et seq. (1914). Among the useful primers on antitrust is John H. Shenefield & Irwin M. Stelzer, The Antitrust Laws (Aei Press) (4th ed. 2001).

has already surpassed the U.S. by having not two, but three national antitrust agencies. Where more than one jurisdiction is affected by a potentially anticompetitive practice, there is often at least some cross-border cooperation with respect to investigation and remediation.

In a general sense, the goals of antitrust are threefold: to deter anticompetitive behavior, to restore competition, and to compensate those who are damaged by anticompetitive acts. This begs the question of what behavior is deemed wrongful. Put another way, why do nations care enough about competition to set up a complex antitrust system? There is consensus that we want the economy to provide fair prices, a range of choices, and innovation and that competition produces these desirables. Antitrust is necessary because markets do not automatically provide the benefits of competition. There must be red, yellow, and green lights—rules of the road-- and a policeman patrolling the streets to assure that abuses of the market do not kill the market.

Fair prices are the result of the interplay of supply and demand where no competitor can unilaterally set the price and no group of competitors can collusively agree on the price. Price-fixing can be achieved by competitors working together to limit output, bid-rig, or divide up markets or otherwise interfere with a competitive market. These collusive practices are usually illegal *per se*, which means that their evil effects do not need to be proved. In other words, *per se* means the light is always red. Keep in mind that a cartel is like a monopoly in that it allows the industry to act in a joint fashion as if there are no competitors but only a monopolist. Because the evil is deemed manifest, the mere engagement in the illegal act is all that has to be proved, without having also to prove market power or actual competitive effects. It is these kinds of *per se* illegal acts that land businesspeople in jail.

In a truly competitive market, the price is set by the interplay of supply and demand and each seller must take the market's price. A monopolist, on the other hand, has the power to set the price. Under American law, it is technically not illegal to be a monopolist. If a firm becomes a monopolist in a virtuous manner, it can set whatever price it wants without, in theory, violating the law. (This is not true in some countries where exploitation of monopoly power, such as charging a high price, is considered an abuse of dominance.) Abusing

monopoly power in the U.S., by excluding rivals from the market, is illegal; and attempting to become a monopolist by one's own strategies, other than by being the best at what one does, is also illegal.

Why do we dislike monopoly? There are many reasons. Some are purely economic, such as the dead weight loss to society which occurs when output is reduced below the competitive level. In other words, products are not sold at the high monopoly price, even though there are willing buyers at what would be a lower competitive price in a competitive market. This is pure loss for the society. Another economic argument is that monopoly yields less innovation and less-fundamental innovation than a more competitive market would produce. There are also arguments against monopoly that are more political in nature, such as avoidance of wealth being redistributed from consumers to monopolistic producers; or that we prefer decentralized institutions to centralized economic power, which we tend to identify with political power.

Since we don't want companies to become monopolists by virtue of their strategic behavior toward real or potential competitors, it follows that we should not allow two companies to join forces by a merger or acquisition if there is a reasonable probability that the merger will allow the new, enlarged company to unilaterally raise prices or if the merger is likely to facilitate coordinated activities, i.e. cartel behavior.

Usually, a competitive market will provide a range of choices for those within the market, both consumers and producers. Occasionally we may find a situation where fair price is not an adequate proxy for what we hope competition will provide for the economy, and so we look to the effects on choice and on innovation.[6]

Consumers want a reasonable range of choice in the market as in life generally. When one has no choices, one is not free. Thus, antitrust has a natural tie to democratic theory, at least in the U.S. We will watch to see whether it also has this tie in China and other countries that recently came to favor markets in varying degrees but not necessarily democracy and civil liberties as they are known in the West.

[6] Neil W. Averitt & Robert H. Lande, Using the 'Consumer Choice' Approach to Antitrust Law, 74 Antitrust L. J. 175 (2007).

Innovation is one of the important objectives of competition because it is the route toward economic growth. A more productive, growing economy generates more outputs per unit of input, which means there are more material benefits to go around in the society if they are distributed fairly.[7] Growth is also associated with social tolerance, which we tend to see as an important characteristic of a stable society. We are not certain about the conditions most conducive to innovation, but the general sense is that monopoly results in channeling innovation to what serves the monopolist's objectives and some amount of competition is more likely to spur important innovations.

I now want to turn to some of the areas of green technology activity that can get caught up in antitrust issues. My objective is not to teach law but to alert you to situations where you ought to consider consulting an antitrust attorney. We will do this in the context of speculating about Shai Agassi's new electric car. But first, a little context is needed.

A Digression to Solar Energy

Thirty-two years ago, when I was Acting Deputy Director of the FTC's Bureau of Competition, I co-authored a paper titled "Competition and Solar Energy"[8] in which we described the FTC's concerns about how industries with a vested interest, namely the oil industry and utilities, might try to influence the development of the solar industries. I quoted the scientist Carl Sagan who had recently written:

> I do not think that the development of new technologies should be placed in the control of old technologies; the temptation to suppress the competition is too great. If we Americans live in a free-enterprise society, let us see substantial independent enterprise in all of the technologies upon which our future may depend.[9]

It is worth taking a few moments to recall our concerns of yesteryear, because for twenty-five years relatively little changed.

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[7] *See* Benjamin M. Friedman, The Moral Consequences of Economic Growth (2007).
[8] *See* Albert A. Foer & Dennis Drabelle, *Competition and Solar* Energy, 9 J. Contemp. Bus. 45 (1980).
[9] Carl Sagan, Broca's Brain: Reflections on the Romance of Science, 36 (1974).

In 1980 the area of solar collectors, barriers to enter solar heating and cooling markets were relatively low. Patents on the basic technology had mostly expired, or were easily circumvented. Initial capital requirements were relatively small, and a national law seemed to limit or regulate the role of the large utilities in supplying or installing residential energy conservation devices, in order to keep the utilities from flexing their muscle as local monopolies in the provision of gas or electricity so as to gain power in the free market for solar devices.[10] In particular, the law attempted to minimize the opportunities for utilities to cross-subsidize their competitive marketing of energy-conservation devices with revenues from their regulated monopolies, since this could destroy an independent market for conservation services.

A second concern was the possibility that utilities could raise their rates to unfairly discriminate against solar energy users. This possibility would arise from the fact that, for a long time to come, solar water and space heaters would have to depend on utilities' energy for back-up during protracted periods of cloudiness, and we didn't want the utilities to protect their own generation at the expense of solar. State regulation was seen as the answer to this possible problem.

Many of the same concerns applied to photovoltaics, whose energy generation through the impact of sunshine on solar cells must also be backed up by utilities' energy when the sun does not shine. Whereas the oil companies were not players in the solar collection market, the three top manufacturers of photovoltaic cells in 1980 were either partly or wholly owned by oil companies, and 40 percent of the industry's 1978 sales (albeit a mere $15 million in total) were made by affiliates of oil companies. My co-author and I suggested it was too early in the development of the industry and there were too many complexities involved to be overly worried about suppression of photovoltaics by the oil companies.

[10] The National Energy Conservation Policy Act, 42 U.S.C. §§ 8251-8262 (1978).

To quickly bring matters up to date, the first commercial photovoltaic startup was Solarex in 1973. It soon had two competitors, subsidiaries of oil companies ARCO and Exxon. After dramatic cutbacks in government support for solar under the Reagan administration, these oil companies exited the small niche market and Solarex was later sold to Amoco (now BP).[11] The initiative for photovoltaics moved to Japan in the 1980's, where major companies coordinating on national strategic goals competed vigorously among themselves., leading to the production of such products as solar-powered watches, calculators, and rooftop photovoltaic systems.[12] Germany came on strong, promoting production of "renewables" (note that fashion began to substitute "renewables" for "solar energy") through its "feed-in tariff" that subsidized solar efforts. By 2007, a German company known as Q-Cells had become the number one producer of photovoltaic cells in the world.[13] The global solar industry's center of gravity then shifted to China, with Suntech becoming operational in 2001. Focused on low cost exports, Suntech's sales in 2010 were over $3 billion.[14]

Going back to 1980, we at the FTC were also concerned that utilities might be motivated to discourage their customers from substituting on-site solar electricity for utility services. A federal law, however, authorized the Department of Energy to promulgate rules requiring non-discriminatory rates for small power producers, such as homeowners with photovoltaic installations.[15]

If there were to be evidence of collusion by the oil industry or the utilities to suppress the new industry, that would have justified antitrust action. Absent such evidence, we thought it best to leave the emerging industry alone. And for the most part, antitrust enforcement has continued to leave the solar industry alone.

In fact, until the last few years, it would be an understatement to say the solar industry has not grown as rapidly as most experts had anticipated; but this does not seem to

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[11] *See* Yergin, *supra* note 1, at 574.
[12] *Id.* at 575.
[13] *Id.* at 578.
[14] *Id.* at 580.
[15] The Public Utility Regulatory Policies Act, 16 U.S.C. §§ 2601-2645 (1978).

be the fault of either the oil industry or the utilities industry engaging in a suppression policy. A major change has been globalization, which was not a factor in the 1980 analyses. Today, the largest issue seems to be China's strategy for dominating solar by employing the benefits of state capitalism.[16] According to an anti-dumping claim by U.S. solar manufacturers against China, currently pending in the U.S. International Trade Commission, Chinese companies are selling solar panels below cost in order to drive other manufacturers out of the market. [17] This is roughly analogous to a claim of predatory pricing under our antitrust laws. Low pricing of solar and the high price of oil products are apparently moving solar panels ever closer to the point where solar can compete with fossil fuels without the benefit of subsidies.[18]

Displacing an Incumbent Industry

The vague concern about an incumbent industry strangling a potential rival in its crib, or at least taking it over for its own purposes, continues. I began this talk by saying that Shai Agassi's Better Place could displace the oil monopoly with an electric car. This opens up several potential discussions. First, is there really an oil monopoly? Not in the antitrust sense. There are a variety of firms involved in this industry, some of which are countries, some are state-owned enterprises, and some are private companies. It is a cartel, not a monopoly that the electric car would displace. The important point, however, is that green innovation has the potential of displacing powerful incumbents and this inevitably raises the question of how the incumbents will react to defend their turf.[19] The antitrust agencies have recent

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[16] For more on state capitalism, see my review of Ian Bremmer, The End of Free Markets: Who Wins the War Between States and Corporations? (2010), http://www.antitrustinstitute.org/content/book-review-bert-foer-reviews-ian-bremmers-end-free-markets.

[17] *See* Steven Mufson, *The Race to Rule the Sun*, Wash. Post, Dec. 18, 2012, at G1.

[18] Id.

[19] *See* Diana L. Moss & John E. Kwoka, *Competition Policy and the Transition to a Low-Carbon Efficient Electricity Industry*, 23 The Electricity Journal 6, (2010). *See also U.S. v. Nat'l City Lines*, 186 F.2d 562, 566 (7th Cir. 1951). This case shows how an incumbent industry might attempt to squelch rivals employing greener technologies. In this case, a joint-venture known as National Pacific Lines was created, in which General Motors, Firestone Tire, Standard Oil of California, Mack Truck Company and others were investors. The venture's goal was to "purchas[e] transportation systems in cities where street cars were no longer practicable and supplant[] the [streetcars] with passenger buses." *Id.* at 565-66. The ultimate goal of the investors, however, is clear: to sell more of their products, by selling more buses as well as the tires and fuel they use. Or perhaps, as some have alleged, a broader motive was to undermine public transportation in order to sell more passenger cars. In any case, the venture was rather successful: in a little over 20 years, the venture gained control of 46 public transportation systems in 16 states, *Id.* at 565, in many cases rapidly replacing electric-based systems with

experience with this problem in the form of brick and mortar retailers attempting to keep competitors from selling their products on the Internet. The agencies' approach has generally been to side with the newcomers, protecting new entry. This focus on chokepoints and entry is likely to be relevant as we speculate about the emergence of the electric car.

Potential Chokepoints

In solar, we worried about the chokehold that oil companies or electric utilities might get over solar energy production. How might these concerns play out with regard to the electric car? Both the oil companies and the electric utilities are relevant, but so today is the traditional auto industry, the third powerful incumbent that must be considered.

Oil companies foresee a time when transportation requirements for oil products will be reduced as gasoline is replaced by electricity. They may view this as inevitable in the long run, especially as oil reserves decline, but they may want to take action to draw out the process as long as possible. It is difficult to see how they could do this without colluding, and collusion to slow the growth of electric cars would be both illegal and difficult to keep secret. If oil companies suddenly started buying up companies like Better Place, we could expect antitrust enforcers around the world to open investigations. On the other hand, we might expect to see oil companies re-shape their distribution network of gas stations toward the provision of new battery switch stations and other service centers. Such re-shaping would take advantage of the new opportunities electric cars will generate. Although it might not please Better Place to have such competitors, it seems rather unlikely that their entrance into the battery-replacement market would raise any antitrust problems.

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petroleum-based ones. Whatever the motive, a scheme like this can and should attract antitrust scrutiny. In fact, it did. All of the companies involved were indicted on two criminal counts under the antitrust laws. *Id.* at 564. Ultimately, the only charge that stuck after trial was the monopolization of the markets for buses and tires, for which General Motors was convicted criminally and fined the whopping sum of $5,000. Bradford C. Snell, U.S. Gov't Printing Office, American Ground Transport 109 (1974), *available in relevant part at* http://www.worldcarfree.net/resources/freesources/American.htm.
And while the actual causes of the changes in American public transportation are more complex than a single conspiracy can explain, this example illustrates that, without strong antitrust laws, the threat of such anticompetitive squelching of competing technologies, green or otherwise, is a very real one.

Utilities likely view the new electric car as presenting several advantages for them. The reduced demand for gasoline should reduce the cost of fuel for carbon-burning utilities. More importantly, perhaps, utilities will have the potential of selling more electricity. This blessing can present a challenge, however, in that building new capacity is very expensive and utilities could be overwhelmed if most auto batteries will be re-charged at about the same time.

But this risk is also an incentive to cooperate with the electric car industry in new high tech ways. Smart grid applications can make it possible that batteries will be recharged at precisely the times when there is excess capacity on the system. This requires coordinating agreements and application of appropriate technology to achieve time-of-day pricing for at-home or at-work re-charging of vehicles and precise communications of load utilization for re-charging at switching stations.

The auto companies themselves may be conflicted in their reaction to the electric car. Even though electric cars would be less expensive than the cars currently being manufactured, they would open up a substantial new market that would likely be appealing to someone, and the incumbents would most likely not want to be left out. Nissan Renault has already positioned itself in the electric vehicle market by manufacturing Leaf, a pure electric car driven by a 600-pound pack of lithium batteries, which went to market in 2010.[20] Renault is the auto company that came forward to team up with Better Place. According to Daniel Yergin, "Today, all the major automakers are moving, with varying degrees of conviction, toward an electric car offering."[21]

Predictions of penetration for plug-in hybrid electric. vehicles (PHEV's) and pure electric cars vary widely.[22] The auto industry's dealerships will gradually have to change their inventory mix and dealership agreements may have to be modified. Gasoline service stations

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[20] See Yergin, supra note 1, at 700.
[21] *See* Yergin, *supra* note 1, at 699.
[22] "To illustrate how widely PHEV market penetration estimates vary, the U.S. Energy Information Administration (EIA) forecasts that PHEV's will represent only about 2% of all vehicle sales by 2030 or only about 200,000 to 300,000 vehicles a year. In contrast a 2007 study by the Electric Power Research Institute (EPRI) and the Natural Resources Defense Council (NRDC) posits a midrange 2030 scenario with PHEV's achieving a 50% market share, or 7.5 million vehicles a year." Peter Fox-Penner, Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities 70 (2010).

will see major changes in their business as combustion cars come off the road. Manufacturers of internal combustion engines will face a declining market.

The need for coordination that honeycombs the discussion of the emergence of a new network for operating and servicing the electric car, raises questions about mergers, less restrictive collaborations, standards, and intellectual property rights. All of these questions require an understanding, first, of how antitrust enforcers think about market definitions.

Defining the Market

Antitrust analysis begins with defining the relevant market, which encompasses both the product market and the geographic market. Generally speaking, the antitrust law looks primarily to a consumer's alternatives. What products are readily substitutable?[23] Assuming for the moment that the Better Place product becomes the only brand of pure electric car,[24] it will compete in some sense with hybrids like the Chevy Volt, Toyota Prius, Honda Civic Hybrid Sedan not to mention traditional combustion cars still in the market. Are all of these vehicles to be included within the same antitrust market? Obviously, to the extent that the differently motored vehicles are all considered interchangeable by consumers, then any one type is not likely to have a monopoly share of the market. But market definition can change over time as market realities change, and what is interchangeable today may not be tomorrow.

Substitutability can be affected not only by consumer behavior, but also by current and proposed government mandates and other regulations, including subsidies such as are now available for the purchase of electric cars in the U.S. The history of solar energy in the U.S. demonstrates that government support can be increased, decreased, or terminated. Another variable may well be imported cars, whose role in the domestic market can be affected by currency exchange rates, tariffs, foreign regulations, and subsidies and other forms of governmental favoritism.

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[23] *See* Waldman & Ward, *supra* note 4, at 2.
[24] For purposes of discussion, I am overlooking Nissan's Leaf.

Of special note is the relatively recent development of what are called innovation markets, reflecting the research and development directed toward new products. Although somewhat controversial in concept, the antitrust agencies have brought at least ten cases challenging mergers in innovation markets, mostly involving the pharmaceutical industry and there is renewed support for the concept in the government's guidelines for horizontal mergers.[25] As Michael Carrier puts it,

> The theory behind innovation markets is that a merger between the only two firms in R&D might increase the incentive to suppress at least one of the research paths. With no other firms ready to enter the market, the merging firms might not wish to introduce a second product that would reduce sales of the first.[26]

When arriving at an antitrust market definition, enforcers can take into account the potential competition of near-term future entrants as well as actual existing competitors. All in all, market definition can be a particularly difficult concept to pin down when products are in their infancy and industries are converging and diverging.[27]

Mergers and Acquisitions

Although there have been a number of mergers in green technology, "[T]he U.S. antitrust agencies have not had much opportunity or reason to review clean tech transactions."[28] One of the few published articles that focuses specifically on antitrust and clean technology describes a 2009 FTC investigation of the acquisition by Panasonic of Sanyo involving, in particular, two types of batteries, one of which is used by hybrid electric vehicles. The FTC required the divestiture of one type, where the elimination of the assets

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[25] U.S. Dep't of Justice & FTC, Horizontal Merger Guidelines (2010), *available at* http://www.ftc.gov/opa/2010/08/hmg.shtm. ("The Agencies may consider whether a merger is likely to diminish innovation competition by encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger. That curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products.")

[26] Michael A. Carrier, Innovation for the 21st Century 91 (2009).

[27] Michael A. Carrier, *An Antitrust Framework for Climate Change*, 9 NW J. Tech & Intell. Prop. 513, 514 (2011) http://scholarlycommons.law.northwestern.edu/njtip/vol9/iss8/1.

[28] *See* Waldman & Ward, *supra* note 4, at 4.

would have reduced competition, but permitted the overall transaction to go forward with respect to the hybrid electric vehicle battery assets. This distinction was justified on the basis of whether the battery type had sufficient rivals so that competition would not be substantially lessened.[29]

Based on this case, the authors conclude:

> This enforcement action suggests that, in merger reviews, the FTC is likely to approach market definition issues in clean tech industries as it does in more traditional industries: identify the overlapping products and the firms that supply those products and assess –in a fact intensive way—the full range of competition from other products. The enforcement agencies are unlikely to consider "clean tech" as a relevant antitrust market. Instead, they will likely consider "clean tech" as consisting of many markets whose contours will undoubtedly change as these sectors evolve over time."[30]

This seems like a reasonable prediction.

A final word on mergers. Relatively large mergers and similar transactions must be pre-notified to the FTC and the Department of Justice. [31] It is a good idea to check with an antitrust attorney to learn whether a pre-merger notification is needed for any given transaction, as the regulations are complex and the penalties severe. About 97 percent of pre-notified transactions are permitted to go through within thirty days. Of the other three percent, about half are eventually allowed to consummate and half are subjected to conditions or are blocked. Thus, the vast majority of transactions, even those large enough to be reportable, do not raise antitrust concerns.

Other Forms of Collaboration

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[29] *See* Carrer, *supra* note 27, at 515. *See also* Panasonic Corp., FTC Docket No. C-4274, File No. 091-0050 (Jan. 6, 2010) (decision and order), available at http://www.ftc.gov/os/caselist/0910050/index.shtm.

[30] *See* Waldman & Ward, *supra* note 4, at 5.

[31] Hart-Scott-Rodino Act, 15 U.S.C. §§ 1-38 (1976).

There are many other forms of collaborations in addition to mergers, such as joint ventures, contracts, license agreements, and standard-setting. All of these might be called into play as the electric car comes onto the market. For instance, Renault and Better Place have what they describe as a partnership in which Renault will manufacture 100 percent electric vehicles. Better Place will provide an electric battery recharging network across Israel, and the Government of Israel will help customers through tax incentives.[32]

A. Joint Ventures

Joint ventures are viewed by antitrust under the yellow light of the Rule of Reason, not the *per se* rule. This means that great weight is given to the legitimate purposes of the venture in creating something new. We can assume there will be many collaborative activities needed as the smart grid comes into play.[33] For example, the re-charging of batteries for the electric car will likely be tied to a smart grid so that charging can be timed to coincide with excess capacity on the system. Such interoperability could be accomplished by a joint venture or in other ways. Waldman and Ward note, "Many company interactions in clean tech may very well involve both complementary and competitive elements. In these situations, the parties should be careful to understand which 'hat'—whether competitor or complement supplier—they are wearing."[34] It is usually much safer to make agreements with a complement supplier than with a competitor.

B. Vertical Relations

Contracts frequently help structure vertical relationships within a supply chain, for example between manufacturer and wholesaler or wholesaler and retailer. Vertical relations may restrict competition in certain ways. Suppose Better Place has a provision with Renault

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[32] "In the long run, the agreement is that Better Place will provide nearly 500,000 battery recharging stations, battery switching stations, and a customer information system." http://www.renault.com/en/groupe/developpement-durable/environnement/pages/focus-better-place.aspx (last visited Feb. 12, 2012).

[33] *See generally* Peter Fox-Penner, Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities (2010).

[34] *See* Waldman & Ward, *supra* note 4, at

in which Renault agrees not to build an electric car with any competitor of Better Place. This type of vertical restriction, an exclusive deal, would be viewed by antitrust under a Rule of Reason. The main question would be whether such an exclusive agreement is likely to foreclose a substantial amount of commerce by making it practically impossible for other electric car manufacturers to enter the market. Given the number of potential manufacturers of auto bodies, it seems unlikely that there would be an antitrust problem.

But this raises a possible question. What if Better Place is or becomes the only manufacturer of electric cars? Would this make it a monopoly subject to challenge? We've said that there is a "green" antitrust light to become a monopolist by being the best on the merits, and this generalization also applies to being the first and thus far the only one in the market. Antitrust law may take into account the life-cycle situation by giving leeway to a new firm or an emerging industry. For example, the DOJ did not pounce on Microsoft when it first had a monopoly on the PC operating system.[35] Only after this proved to be an enduring monopoly and only after there was substantial evidence that it was using this monopoly improperly was Microsoft attacked.

In our discussion of market definition, it seemed likely that an electric car would be viewed as competitive with other types of vehicle, and thus unlikely to be deemed a monopolist. We rested this on the assumption that consumers will consider differently propelled vehicles to be substitutes. But what if there is a substantial group of consumers who are sufficiently environmentally conscious, and therefore will only buy an electric car? We can leave that puzzle for another day. But it calls attention to the need to keep track of changing consumer behavior on perceptions of market definition, and hence possible antitrust exposure, over time.

C. Standards

[35] See Ken Auletta, World War 3.0, Microsoft and Its Enemies (Random House 2001), among the many histories of the famous case.

Standards are extremely important in the high tech arena, especially in the creation of smart grids, in order to achieve the type of interoperability that is so commonly needed. [36] In the case of electric cars, one of the many challenges is lack of standardization in battery size. Without a standard, the development of switching stations will likely be more difficult and expensive than necessary.[37] Yet whenever a standard is needed, unless it is a *de facto* standard set by a dominant firm, it must be agreed upon by most of the stakeholders in an industry, which may include horizontal competitors, vertical suppliers, and users.

Standard-setting rather obviously offers the potential for collusion to exclude competitors or delay the process of innovation, both of which can trigger antitrust action. Unlike mergers, there is no pre-notification process for standard-setting and there are no clear guidelines that have been formally adopted by the antitrust agencies. However, over the years, the courts have made it clear that certain elements of fairness must be present in the procedures and the process cannot be hijacked to serve the purposes of one group over others. Manipulation of the standard-setting process[38] and deception by participants[39] have both been attacked by the antitrust agencies.

D. Intellectual Property Rights

One of the problems in standard setting occurs when the viability of a standard depends on one or more patents being licensed to the various users of the standard. This will be particularly important in development of the Smart Grid, and it could also influence the development of the electric car. Can the owner of an important patent, while participating in

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[36] "[I]nteroperability will revolve around the smart grid technologies that are deployed to integrate, monitor, and optimize various resources on the grid. The process of standard setting for the smart grid is therefore crucial but at the same time it creates opportunities for anticompetitive behavior. Participants in standard-setting processes could hold patents on key technologies or have other interests in ensuring that certain technologies are central to the standard. It is therefore important to ensure that interoperability standards reflect a competitive underlying process." *See* Moss & Kwoka, *supra* note 17, at 10. *See also* Carrier, *supra* note 27, at 521-525.

[37] *See* Yergin, *supra* note 1, at 698. "EV's [electric vehicles] and PHEV's [plug-in electric vehicles] are likely to compete on the size, weight, and range of their batteries. Standardization has still yet to occur for the lead-acid batteries that have been starting internal combustion engine vehicles for many decades now."

[38] *See Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492 (1988) and its progeny.

[39] See *In re Dell*, 121 F.T.C. 616 (1996) and FTC, Statement, I*n re Union Oil Co. of California*, Docket No. 9305 (June 10, 2005), www.ftc.gov/os/adjpro/d9305/050802statement.pdf., and FTC, Statement, In re Negotiated Data Solutions,\LL C, File No. 0510094. http://www.ftc.gov/os/caselist/0510094/080122statement.pdf. But see *Rambus Inc. v. F.T.C.,* 522 F.3rd 456 D.C. Circ. 2008).

the standard setting, fail to disclose the significance of the patent it holds? If yes, we have the risk of a "patent ambush" occurring later on when the whole industry has moved forward with a standard only to learn that the patent holder will suddenly make monopolistic demands on the rest of the industry.[40] Often, when a standard is to be dependent on a patent, there will be an agreement up front that licenses will be granted on a fair, reasonable, and non-discriminatory basis. The application of this promise has often proven controversial and the later withdrawal of the promise has given rise to antitrust claims.

Another problem that arises with intellectual property relates to how far the exclusionary right extends. I thought the U.S. Court of Appeals for the District of Columbia got it right, metaphorically, in the *Microsoft* case when it said, basically, just because you own a baseball bat, you don't have the right to go around bashing people over the head with it.[41] The Court said, IP rights "do not confer a privilege to violate the antitrust laws."[42] Unfortunately, this principle is not always applied appropriately.

Indeed, it is important to bear in mind that in the U.S., an owner of intellectual property generally has the right to refuse to license the patent and this will not lead to a finding of monopolization. A court, therefore, will typically not mandate licensing as an antitrust remedy. The situation is different in the European Union where refusals to license IP are more likely to be successfully challenged. [43]

In a way, IP and Antitrust go hand in hand, because they both are intended to foster innovation. But they do so in very different ways. IP provides an incentive to innovate by giving exclusivity over an invention to the patent holder for a period of time and this, of course, may amount to monopoly power. Antitrust on the other hand fights monopoly. While IP may incentivize an initial innovation, it may also make it difficult for follow-on innovations to occur and the patent monopoly may be abused by extending its influence

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[40] *See* Michael A. Carrier, Innovation for the 21st Century 93 (2009).
[41] *United States v. Microsoft Corp.,* 253 F.3rd 34 (D.C. Cir. 2001). Microsoft's claim that its copyrights gave it the right to impose anticompetitive licensing requirements was as an assertion "no more correct" than the claim that "use of one's personal property, such as a baseball bat, cannot give rise to tort liability."
[42] *Id.* at 63.
[43] The difference between U.S. and E.U. treatment of IP licensing is described in Carrier, *supra* note 27, at 515-21.

unduly. Hence, we have a basis for conflict between two bodies of law. And indeed there is a gray area today that may be relevant where green technology is IP-dependent.

One of the ways in which the Better Place electric car could be affected by this gray area involves aftermarkets. When one purchases a razor, it comes with a blade, but we anticipate that the blade will have to be replaced periodically. The blade is part of an aftermarket. Similarly, the electric car's battery will have to be both re-charged and eventually replaced. To the extent that software is involved in the battery's replacement and it is copyrighted or the battery itself is patented, the IP holder could have substantial influence over the aftermarket through the licensing process. It could even assure that there is only one participant in the aftermarket. An obstacle for those of us who would prefer to have competitive aftermarkets was created by the Digital Millenium Copyright Act,[44] which prohibits the circumvention of technological measures. A complicated law with many exceptions, its extent and potential for harm to competition are at best unclear.[45]

Conclusion

Antitrust enforcement has not played a major role thus far in emerging green technology markets. Nevertheless, concern about future governmental enforcement and private treble damage cases will help shape developmental strategies and competitive tactics in the boardroom as mergers and other transactions among competitors or between participants at various levels of the industry increase in frequency and size. As particular markets become increasingly consolidated, the need to be aware of antitrust traps becomes ever more important. With the exception of outright collusion among competitors, most behavior is examined under the nebulous Rule of Reason, which takes into account the legitimate business justifications that can be demonstrated. This does not mean that all is fair in love and war. It behooves executives and investors and their counsellors to be alert to the signs that a marriage counselor, a military expert, or, indeed, an antitrust lawyer should be brought into the act.

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[44] Pub. L. No. 105-304, 112 Stat. 2860 (1998), *codified at* 17 U.S.C. § 1201.
[45] *See* Carrier, *supra* note 27, at 179-90.