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Race Cartels: How Constructor Collaboration Is Curbing Innovation in Formula 1

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Race Cartels: How Constructor Collaboration Is Curbing Innovation in Formula 1

ABSTRACT

Formula 1 is in the midst of a copycat scandal: technology has made it possible for teams to reverse engineer clones of competitors' race cars. This is a less than ideal state of affairs for the championship series, which prides itself on being the pinnacle of motorsport and automotive innovation, thanks in large part to the cars' rapid rate of technological advancement. In order to address this problem, the Fédération Internationale de l'Automobile (FIA), Formula 1's governing body, must increase independent innovation efforts by amending the technical regulations to restrict the extent of presently allowed inter-team collaboration. Worried that the sport was becoming a "copying championship," the FIA adopted new measures that ban extreme reverse engineering methods. Because these new FIA regulations do not limit the degree of coordinated conduct between teams, this approach will likely fail to remedy the sport's copying problem because team plagiarism is an anticompetitive side effect of this collusive behavior.

The FIA addresses the copying problem as one of trade secret misappropriation. By contrast, this Note approaches the issue as one of unregulated anticompetitive conduct. Analyzing the technical partnerships in Formula 1 under antitrust law elucidates their harmful effects on the racing series. This Note urges the FIA to adopt measures that limit Formula 1 teams' ability to collaborate, before the "A-B team" phenomenon further diminishes the sport's innovation efforts.

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Over the last few decades, and increasingly so in the last year, Formula 1 (F1) has been plagued by “copycat” scandals.¹ Specifically, teams will photograph or otherwise document rival cars in order to reverse engineer parts of that car.² This practice has triggered a slew of protests from teams, causing the Fédération Internationale de l'Automobile (FIA), F1's governing body, to impose financial penalties and deductions in championship points and adopt new, stricter regulations.³

F1's copycat problem can be traced back to the sport's failure to adequately encourage independent innovation. Part of the problem stems from the inadequate intellectual property (IP) protection afforded to the racing teams' innovations. One might assume that F1 would be chock-full of patents: it has immense financial resources⁴ and some of

1. Jeremy Hart, *Where's Bond When You Need Him? How Teams Spy on Each Other in Formula One*, AUTOWEEK (Dec. 1, 2002), <https://www.autoweek.com/news/a2116451/wheres-bond-when-you-need-him-how-teams-spy-each-other-formula-one/> [https://perma.cc/38D3-AXAR]; Jack de Menezes, *F1 Engulfed in Copying Scandal as Five Teams Intend to Appeal Racing Point Decision*, THE INDEPENDENT (Aug. 8, 2020, 11:14 AM), <https://www.independent.co.uk/sport/motor-racing/formula1/f1-racing-point-copying-scandal-appeal-mercedes-ferrari-renault-70th-anniversary-grand-prix-a9660936.html> [https://perma.cc/6AC2-U7E2].

2. See Hart, *supra* note 1; Adam Cooper, *F1 to Clamp Down on “Reverse Engineering” of Rival Cars*, AUTOSPORT (Aug. 14, 2020, 7:58 AM), <https://www.autosport.com/f1/news/151371/f1-to-clamp-down-on-reverse-engineering-of-rival-cars> [https://perma.cc/PJ8A-4XMR].

3. See Cooper, *supra* note 2.

4. Dhruv George, *What Are the Budgets for All 10 Formula One Teams in 2019?*, ESSENTIALLY SPORTS (Nov. 1, 2019, 5:02 PM), <https://www.essentiallysports.com/what-are-the-budgets-for-all-10-formula-one-teams-2019/> [https://perma.cc/RD3F-ZZVF]; Asher Fair, *Formula 1: What Are Current Team Budgets with \$175M Cap Impending?*, BEYOND THE FLAG,

the best engineers in the world at its disposal.⁵ But in fact, few of the technological creations engineered in F1 factories are patented.⁶ This is due to the global nature of the racing season, in conjunction with the sport's rapid rate of innovation.⁷ F1 is a "traveling circus,"⁸ with approximately twenty-one races per season, each in a different country.⁹ As a result, teams would have to obtain patents in each of these countries in order to effectively protect their inventions,¹⁰ or, alternatively, obtain internationally enforceable patents, which impose prepublication waiting periods ranging from eighteen months to five years.¹¹ In that time, an entire racing season will have come and gone, and as a result, the patented technology would likely be obsolete on the racetrack.¹² F1 is the pinnacle of motor racing, but it is also the pinnacle of technology: races are won by fractions of a second, so teams work around the clock in search of even the most minute lap-time advantage. Because of this, race technology has a limited lifetime.¹³ Accordingly, the incentive to patent race technology is marginal: a patent-holder's right to exclusive use is of little value if no competitors are interested in exploiting the product.

<https://beyondtheflag.com/2019/11/06/formula-1-current-team-budgets-175m-cap-impending/> [<https://perma.cc/Y8BN-5U8N>] (last visited Mar. 13, 2021).

5. Vlad Savov, *In Formula 1, You Have to Be Amazing Just to Be Average*, THE VERGE (June 26, 2018, 8:37 AM), <https://www.theverge.com/2018/6/26/17499438/formula1-french-grand-prix-behind-the-scenes> [<https://perma.cc/29VY-GE44>].

6. See Gavin Dundas, *Patents: A Driving Force in Formula 1?*, REDDIE & GROSE (Mar. 25, 2015), <https://www.reddie.co.uk/2015/03/25/patents-a-driving-force-in-formula-one/> [<https://perma.cc/K3E7-UH5L>]; Mike Evans, *An Engineer's Primer for Formula 1*, MEDIUM (Mar. 18, 2018), <https://medium.com/@mikeev/an-engineers-primer-for-formula-1-66a515a00a6f> [<https://perma.cc/ECS8-SZJT>] (describing F1 as "[a] sport made up of corporations, all competing to create the best version of a product within a carefully-defined set of regulations, all while operating without the aid of patent protection").

7. See Savov, *supra* note 5.

8. Brad Spurgeon, *But Drivers Remain Secluded from Fans: It's a Traveling Circus on Formula One Tour*, N.Y. TIMES (Oct. 26, 1998), <https://www.nytimes.com/1998/10/26/sports/IHT-but-drivers-remain-secluded-from-fans-its-a-traveling-circus-on.html> [<https://perma.cc/46VB-4MT3>].

9. FORMULA 1, <https://corp.formula1.com/> [<https://perma.cc/26KS-QQ7S>].

10. See Jack Rogan, *Formula 1: A Driving Force Behind Intellectual Property?*, VENNERSHIPLEY (Apr. 1, 2019), <https://www.vennershipley.co.uk/resources/publications/2019/04/01/formula-one-a-driving-force-behind-intellectual-property> [<https://perma.cc/3PG6-36FK>].

11. See Patent Cooperation Treaty art. 21, ¶ 2, June 19, 1970, 28 U.S.T. 7645, 1160 U.N.T.S. 231; *FAQ - Applying for a Patent*, EUR. PAT. OFF., <https://www.epo.org/service-support/faq/own-file.html> [<https://perma.cc/7EZ5-BNRV>] (last visited Nov. 12, 2020).

12. Telephone Interview with James Key, Technical Director, McLaren Racing (Jan. 4, 2020); Rogan, *supra* note 10.

13. Telephone Interview with James Key, *supra* note 12.

Since patent protection is essentially unavailable to the racing teams, they generally rely on trade secret law.¹⁴ Trade secret law offers a different form of IP protection than that afforded by patents. Significantly, it is not unlawful to reverse engineer trade secrets in order to duplicate the protected invention.¹⁵ This means that, rather than investing in research and development of new technologies, many F1 teams spend time and resources attempting to clone components of their competitors' cars.

IP law is primarily concerned with encouraging creation. This is achieved by incentivizing inventors with economic benefits—the right to “reap what they sow.”¹⁶ The trade secrets of F1 are particularly vulnerable to disclosure though, and as a result, team IP is thinly protected or entirely unprotected by the law. Consequently, incentivizing F1 innovation depends upon the FIA, but current regulations fail to meet this responsibility. Significantly, the ramifications of these shortcomings extend far beyond the racetrack: many technologies that are incorporated into today's road cars find their roots in F1 labs.¹⁷ These inventions improve automotive safety and efficiency both on and off the track, and as such, have repercussive effects in the global market.¹⁸

This Note addresses the need for a regulatory regime in F1 that better incentivizes innovation and competition. Part I provides relevant background on the sport and the FIA. Part II examines how trade secret protection in F1 fails to further the goals of IP law. Part III proposes that the FIA modify F1 regulations by restricting the extent to which competitors are able to collaborate with each other.

14. See Rogan, *supra* note 10; Dundas, *supra* note 6.

15. UNIF. TRADE SECRETS ACT § 1 cmt. 2 (UNIF. L. COMM'N 1985) [hereinafter UTSA]; Agreement on Trade-Related Aspects of Intellectual Property Rights art. 39, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 108 Stat. 4809, 1869 U.N.T.S. 299 [hereinafter TRIPS].

16. See TRIPS, *supra* note 15, at art. 7 (“The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology”).

17. See Fraser Masefield, *What Has F1 Ever Done for Us?*, BLEACHER REP. (Oct. 19, 2013), <https://bleacherreport.com/articles/1816116> [<https://perma.cc/QL8D-LN2Y>]; Rogan, *supra* note 10.

18. See *F1 Hybrid Engines Will Play 'Major Part' in Reducing Vehicle Emissions*, Says Carey, FORMULA 1 (Sept. 12, 2019), <https://www.formula1.com/en/latest/article.f1-hybrid-engines-will-play-major-part-in-reducing-vehicle-emissions-says.2bJbQ072G8dIfMsK8CANtk.html>.

I. GETTING UP TO SPEED ON F1

A. *The World's Best-Funded Science Fair*

In order to recognize why trade secret protection is so ill-suited to the world of F1, some background knowledge of the sport is required. As mentioned, an F1 season is generally comprised of twenty-one races (Grands Prix) in twenty-one different countries, all in pursuit of the World Constructor's Championship title (WCC) and the World Driver's Championship title (WDC).¹⁹ There are ten constructors²⁰ and each team races two cars per Grand Prix, making a total of twenty F1 drivers on the grid. The WCC is awarded to the most successful "constructor," a term used synonymously with "team" to describe the entity that designs and builds the race cars.²¹ The WDC, in contrast, is awarded to the most successful driver of the season, irrespective of the car.²² The championships are determined over the course of the season by an aggregate points system that is based on individual Grand Prix results.²³ Both of these titles are awarded by the FIA.²⁴ The FIA is an international association that promotes motor sport, as well as automotive safety, sustainability, and accessibility.²⁵ For the purposes of this Note, it is sufficient to know that the FIA operates as F1's governing body, complete with its own dispute resolution system.²⁶

The fact that the FIA awards two separate championship titles underscores what sets F1 apart from other sports. Success hinges as much, if not more, on technical (car) performance than on athletic (driver) performance.²⁷ In this sense, F1 can be viewed as an unfair competition from the driver's perspective because it is effectively "a

19. 2021 *Formula One Sporting Regulations*, FÉDÉRATION INTERNATIONALE DE L'AUTOMOBILE, at arts. 6.1–6.2 (Feb. 19, 2021) [hereinafter *2021 F1 Sporting Regulations*], https://www.fia.com/sites/default/files/2021_formula_1_sporting_regulations_-_iss_6_-_2021-02-19.pdf [https://perma.cc/DG9B-DGSN].

20. In the 2020 season, the ten teams were Mercedes, Ferrari, Red Bull, McLaren, Renault, Haas, Racing Point, Alfa Romeo, AlphaTauri, and Williams. 2020 *F1 Drivers and Teams*, RACEFANS, <https://www.racefans.net/2020-f1-season/2020-f1-drivers-and-teams/> [https://perma.cc/SLH6-JLXZ] (last visited Mar. 13, 2021).

21. See 2021 *F1 Sporting Regulations*, *supra* note 19, at arts. 6.2–6.3.

22. *Id.* at art. 6.1.

23. *Id.* at arts. 6.1, 6.4.

24. *Id.* at arts. 6.1–6.2.

25. *Organisation*, FÉDÉRATION INTERNATIONALE DE L'AUTOMOBILE, <https://www.fia.com/organisation> [https://perma.cc/KZ99-DDV5] (last visited Mar. 13, 2021).

26. *FIA Courts*, FÉDÉRATION INTERNATIONALE DE L'AUTOMOBILE, <https://www.fia.com/fia-courts> [https://perma.cc/9C36-9V7U] (last visited Mar. 13, 2021).

27. See Savov, *supra* note 5.

science fair dressed up as a racing series.”²⁸ Cyril Abiteboul, Renault’s managing director, put it succinctly: “You take the best driver in the world and you give him a lesser car . . . and he won’t win.”²⁹

It is probably not shocking to learn that F1 is a sport flooded with money. The ten teams collectively spent \$2.6 billion in the 2018 season.³⁰ And unsurprisingly, deeper pockets often correlate with greater track success.³¹ In the last ten seasons, the only constructors to win the WCC have been Mercedes and Red Bull, with budgets of \$484 million and \$445 million, respectively.³² Compare this with the \$132 million budget of Williams, whose last constructor title came in 1997.³³

Yet even with budgets in the hundreds of millions, it is not uncommon for F1 teams to operate at a loss.³⁴ Constructors must redesign and rebuild their cars each season,³⁵ and often any team revenues get pumped straight back into research and development (R&D).³⁶ Moreover, with ever-increasing reliance on technological innovations, the continuous investment into R&D is necessary now more than ever in order to remain competitive in the sport.³⁷

It is not gratuitous to analogize an F1 car to a rocket. Hiding behind the chassis, these cars have almost a mile’s worth of wiring and roughly three hundred sensors, which transmit hundreds of gigabytes of data back to the engineers at up to one thousand times per second.³⁸ F1 cars can accelerate from 0 to 190 miles per hour in ten seconds, and

28. Evans, *supra* note 6.

29. Savov, *supra* note 5.

30. Christian Sylt, *Revealed: The \$2.6 Billion Budget That Fuels F1’s 10 Teams*, FORBES (Apr. 8, 2018, 4:47 AM), <https://www.forbes.com/sites/csylt/2018/04/08/revealed-the-2-6-billion-budget-that-fuels-f1s-ten-teams/#4d839d5f6595> [<https://perma.cc/3LUZ-YUZQ>].

31. See Fair, *supra* note 4.

32. See George, *supra* note 4.

33. *Id.*

34. *Id.*

35. See Sebastian Anthony, *Formula 1: A Technical Deep Dive into Building the World’s Fastest Cars*, ARS TECHNICA (Apr. 4, 2017, 7:26 AM), <https://arstechnica.com/cars/2017/04/formula-1-technology/> [<https://perma.cc/8DWJ-X8FF>].

36. See Sylt, *supra* note 30.

37. See Matt Youson, *The Insider’s Guide to . . . F1 Car Development*, FORMULA 1 (Feb. 10, 2020), <https://www.formula1.com/en/latest/article.pursuit-of-performance-the-formula-1-development-race.3KtIXW0NC45PnsrYEAzRPE.html>.

38. See *How Many Sensors Does Formula 1 Have?*, AUTO. TECH. (June 29, 2017), <http://blog.automotive-technology.com/how-many-sensors-does-formula-1-have/> [<https://perma.cc/G3JY-FCAK>]; Christian Sylt, *How Mercedes Uses Formula One to Rev Up Its Road Cars*, FORBES (June 18, 2015, 3:06 PM), <https://www.forbes.com/sites/csylt/2015/06/18/how-mercedes-uses-formula-one-to-rev-up-its-road-cars/?sh=739fb0aa7b65> [<https://perma.cc/332R-NVLK>].

when braking around corners, drivers experience g-force magnitudes up to three times that of astronauts during a rocket launch.³⁹

It is thus apparent why F1 technical teams are comprised of the world's top engineering specialists from a wide array of disciplines, including aerospace, mechanical, electrical, software, and chemical.⁴⁰ Fortunately, constructors are not the sole beneficiaries of F1 innovations. Many race technologies have been incorporated into today's road cars,⁴¹ while other constructor inventions are utilized by public service sectors, such as health care, manufacturing, and transport.⁴² Take, for example, traction control, which first appeared on the racetrack in 1990.⁴³ This is an electronic stability response that automatically intervenes to prevent a car from losing control on slippery roads when a wheel loses grip.⁴⁴ Today, traction control is a safety measure widely available in road cars and has particular lifesaving import in wet driving conditions.⁴⁵ Continuously variable transmissions, active suspension, carbon fiber chassis, and kinetic energy recovery system (KERS) are further examples of F1's "trickle down" effect.⁴⁶ Today, KERS powers hybrid cars, public bus systems, and even remote islands that are unconnected to mainland power

39. G-force is used to measure the force of Earth's gravitational pull on an object. See John Papiewski, *What Does G Force Mean?*, SCIENCING, <https://sciencing.com/what-does-g-force-mean-13710432.html> [<https://perma.cc/CW6N-EZ8D>] (Mar. 29, 2018); Oprah Sagal, *Is Driving an F1 Car Even More Physically Challenging than a Rocket Launch into Space?*, MOTORLAT (Dec. 26, 2017), <https://www.motorlat.com/notas/3461-is-driving-an-f1-car-even-more-physically-challenging-than-a-rocket-launch-into-space-> [<https://perma.cc/YG7E-WVPJ>]; Anthony, *supra* note 35.

40. See Jordan Golson, *Formula 1 Racing Teams Have Intense Recruitment Programs for Engineers*, POPULAR SCI. (May 16, 2019), <https://www.popsoci.com/formula-1-infiniti-engineering-program/> [<https://perma.cc/9LZV-LXW4>]; Savov, *supra* note 5; Evans, *supra* note 6.

41. Masefield, *supra* note 17; see Sylt, *supra* note 38.

42. See *Pioneering a Better Future*, MCLAREN APPLIED, <https://www.mclaren.com/applied/about/> [<https://perma.cc/F93E-BYQL>] (last visited Mar. 13, 2021); *Applied Science*, MERCEDES AMG PETRONAS FORMULA ONE TEAM, <https://www.mercedesamgf1.com/en/applied-science> [<https://perma.cc/ZN4R-SGHS>] (last visited Mar. 13, 2021).

43. See Abhishek Bharadwaj, *Watch: Detailed Video Shows How Traction Control Ban Has Changed an F1 Driver's Approach*, ESSENTIALLY SPORTS (Apr. 11, 2020, 4:54 PM), <https://www.essentiallysports.com/f1-news-watch-detailed-video-shows-how-traction-control-ban-has-changed-an-f1-drivers-approach/> [<https://perma.cc/7TXH-2GQQ>].

44. See Tom Barnard, *What Is Traction Control?*, CARBUYER (June 10, 2019), <https://www.carbuyer.co.uk/tips-and-advice/168758/what-is-traction-control> [<https://perma.cc/RF7Z-URM5>].

45. See Masefield, *supra* note 17.

46. See *id.*; *How F1's Best Brains Have Made Hybrid Tech the Future of Road Cars*, EUROSPORT, https://www.eurosport.com/formula-1/how-f1-s-best-brains-have-made-hybrid-tech-the-future-of-road-cars_sto5003914/story.shtml [<https://perma.cc/7KK5-WMAU>] (Nov. 26, 2015, 5:27 AM).

grids.⁴⁷ The FIA's recent commitment to green racing will likely result in an upsurge of applied race technologies.⁴⁸ F1 power units are already the world's most efficient engines,⁴⁹ but hybrid capabilities are being dramatically ramped up as FIA regulation changes force the sport into eco-friendly terrain.⁵⁰

Yet, this drive to constantly create cutting-edge technologies has been asterisked by F1's ever-growing "B-team" phenomenon.⁵¹ Weary of the insurmountable costs that go into running an F1 team, FIA regulations allow for constructors to license a number of car parts to rivals.⁵² This supply system has effects both on and off the track.

B. Hitting the Brakes on Innovation

Each year, the FIA promulgates regulations for the upcoming F1 season.⁵³ Included in these regulations are rules setting forth which parts of the race car can be bought from rival teams and which parts must be the constructors' own IP.⁵⁴ Car parts that can be supplied to competitors are called "transferable components."⁵⁵ The gearbox, engine mount, and suspension are all transferable components.⁵⁶ For the purposes of this Note, F1 engines (also called power units) will be

47. Samarth Kanal, *How F1 Technology Has Supercharged the World*, FORMULA 1 (Nov. 7, 2019), <https://www.formula1.com/en/latest/article.how-f1-technology-has-supercharged-the-world.6Gtk3hBxGyUGbNH0q8vDQK.html>.

48. See Dieter Rencken & Keith Collantine, *F1 Mustn't Miss Opportunity Offered by 2026 Engine Rules Change – Brawn*, RACEFANS (June 17, 2020, 7:20 AM), <https://www.racefans.net/2020/06/17/f1-mustnt-miss-opportunity-offered-by-2026-engine-rules-change-brawn/> [https://perma.cc/K6VR-APGX].

49. Kanal, *supra* note 47.

50. These include switching from petrol to biofuels (2022), an increase to 50 percent electric engines (2026), and a pledge to become carbon neutral (2030). See Dominic Tobin, *Two-Stroke Engines and Eco-Fuel: F1 Aims to Be Greener than Formula E*, MOTOR SPORT MAG., <https://www.motorsportmagazine.com/articles/single-seaters/f1/two-stroke-engines-eco-fuel-f1-aims-to-be-greener-than-formula-e> [https://perma.cc/PP7H-5ZSG] (Jan. 13, 2020); Rencken & Collantine, *supra* note 48.

51. See Scott Mitchell, *Renault: B-Teams a Danger to F1's 2021 Vision*, MOTORSPORT.COM (Mar. 15, 2019, 7:32 AM), <https://www.motorsport.com/f1/news/renault-fears-over-b-team-dangers/4352909/> [https://perma.cc/GFF6-HYGS].

52. See *2021 Formula One Technical Regulations*, FÉDÉRATION INTERNATIONALE DE L'AUTOMOBILE, at art. 22.5.1 (Mar. 5, 2021) [hereinafter *2021 F1 Technical Regulations*], https://www.fia.com/sites/default/files/2021_formula_1_technical_regulations_-_iss_9_-_2021-03-05.pdf [https://perma.cc/N423-XF75].

53. Kate Walker, *The Task of Keeping F1 Racing Honest, and Safe*, N.Y. TIMES (Sept. 14, 2017), <https://www.nytimes.com/2017/09/14/sports/autoracing/f1-racing-safety.html> [https://perma.cc/3WHM-WKYF].

54. *2021 F1 Technical Regulations*, *supra* note 52, at arts. 22.3, 22.5.

55. *Id.* at art. 22.5.1.

56. *Id.* at app. 4.

referred to as transferable components because they are supplied to competing constructors in a similar manner, but FIA regulations do not denote them as such.⁵⁷ Only four constructors manufacture power units because the part is so complex and expensive to produce.⁵⁸ Those teams—Mercedes, Ferrari, Renault, and Red Bull—are known as “works” or “factory teams,”⁵⁹ and they supply engines to the remaining six constructors, who are known as “customer teams.”⁶⁰ Works teams design and manufacture every aspect of their cars, while customers construct their cars around the purchased components.⁶¹ This is because FIA regulations mandate that transferable components supplied to customers be identical to those components used by the works team in either the current F1 season or the previous one;⁶² customers can have no input in, nor knowledge of, the design process.⁶³

Works teams choose which competitors they supply parts to.⁶⁴ The ability to strategically license transferable components creates technical partnerships on the grid, but these partnerships vary in degree. This is because there are two distinct types of customer

57. *Id.* at art. 22.2.1(d); see Tanish Chachra, *F1 Engine Suppliers 2020: Who Supplies Engines to Formula 1 Teams?*, THE SPORTS RUSH (Aug. 16, 2020), <https://thesportsrush.com/f1-news-f1-engine-suppliers-2020-who-supplies-engines-to-formula-1-teams/> [https://perma.cc/5K9E-9CNS].

58. See Chachra, *supra* note 57.

59. At the moment, Red Bull is not technically an F1 engine manufacturer because its power units are made by Honda, a third party. *Id.* Honda has manufactured Red Bull's engines since 2019 but will cease to do so at the end of the 2021 season. *Red Bull Secures Engine Technology Ahead of Honda's Departure*, ESPN (Feb. 15, 2021), https://www.espn.com/f1/story/_/id/30904403/red-bull-secures-engine-technology-ahead-honda-departure [https://perma.cc/D6YZ-CBKU]. Honda has agreed to sell its power unit IP to Red Bull so that the F1 team can take over its own engine production. *Id.* By the end of the recently announced engine development freeze from 2022 to 2024, Red Bull will officially become a fully fledged F1 factory team. See *id.* Thus, for the purposes of this Note, Red Bull will be referred to as an engine supplier and as a “works” or “factory” team.

60. See Chachra, *supra* note 57; Jonathan Noble, *Renault Wants “Partners”, Not Customer Teams in F1*, MOTORSPORT.COM (Sept. 9, 2020, 3:50 AM), <https://us.motorsport.com/f1/news/renault-partners-engine-customer-teams/4871056/> [https://perma.cc/H4FN-556Y].

61. See Scott Mitchell, *Where Aston Fits in the Great F1 ‘Works Team’ Debate*, THE RACE (Feb. 7, 2020), <https://the-race.com/formula-1/where-aston-fits-in-the-great-f1-works-team-debate/> [https://perma.cc/SRE3-NVMK].

62. 2021 F1 Technical Regulations, *supra* note 52, at art. 22.5.4. Here, regulations differ between transferable components and power units, in that power units supplied to customer teams must be identical to those used by the factory team in the current season. In other words, engine suppliers cannot sell their customers last season's engine model. See 2021 F1 Sporting Regulations, *supra* note 19, at app. 4(9).

63. See 2021 F1 Technical Regulations, *supra* note 52, at arts. 22.5.3–22.5.4.

64. See *Mercedes Rules Out Supplying Engines to Red Bull*, ESPN (Oct. 9, 2020), https://www.espn.com/f1/story/_/id/30077269/mercedes-rules-supplying-engines-red-bull [https://perma.cc/P8CP-RAFW].

teams: the traditional customer and the B-team.⁶⁵ B-teams, which are becoming more prevalent, buy a host of transferable components from their engine supplier and often share facilities or personnel.⁶⁶ For example, Ferrari supplies Haas with every transferable part and grants Haas access to the Ferrari wind tunnel for aerodynamic testing.⁶⁷ Ferrari employees are also occasionally reassigned to the Haas division, which operates in a neighboring building.⁶⁸ Despite this level of cooperation, both Ferrari and Haas insist that they remain independent constructors.⁶⁹ AlphaTauri and Red Bull take a more extreme approach to the A-B team alliance: both F1 teams are owned by the energy drink company, but in addition to obtaining the “hand-me-down” components of last season’s Red Bull car, AlphaTauri operates as its junior or “sister team.”⁷⁰ Newly promoted F1 drivers will start with the B-team before graduating to a seat in the Red Bull car.⁷¹ A-B team alliances are of great financial benefit to both the works and customer teams, but they also provide strategic advantages.⁷² With a newly imposed spending cap on the horizon,⁷³ increased collaboration presents an opportunity for

65. See Mitchell, *supra* note 51.

66. See Jonathan Noble, *Is F1 Heading Towards a ‘Slave Team’ Future?*, MOTORSPORT.COM (Aug. 30, 2018, 8:29 AM), <https://www.motorsport.com/f1/news/is-f1-heading-towards-a-slave-team-future/3167350/?nrt=54>.

67. See Daan de Geus, *What You Need to Know About the Haas F1 ‘Ferrari Replica’ Row*, THE DRIVE (Mar. 31, 2018), <https://www.thedrive.com/accelerator/19799/what-you-need-to-know-about-the-haas-f1-ferrari-replica-row> [https://perma.cc/N7L5-5MZZB].

68. Dieter Rencken & Keith Collantine, *More Ferrari Staff to Join Separate Haas Division Working on 2022 Car*, RACEFANS (Dec. 22, 2020, 12:27 PM), <https://www.racefans.net/2020/12/22/more-ferrari-staff-to-join-separate-haas-division-working-on-2022-car/> [https://perma.cc/4UM6-BYHB].

69. *Id.*

70. See Gary Anderson, *Gary Anderson on AlphaTauri: Not Just a Red Bull Clone*, THE RACE (Feb. 15, 2020), <https://the-race.com/formula-1/gary-anderson-on-alphatauri-not-just-a-red-bull-clone/> [https://perma.cc/647M-GC4F]; Lawrence Barretto, *Analysis: What Does AlphaTauri’s Switch from Red Bull’s ‘Junior’ to ‘Sister’ Team Actually Mean?*, FORMULA 1 (Sept. 17, 2020), <https://www.formula1.com/en/latest/article.analysis-what-does-alphatauris-switch-from-red-bulls-junior-to-sister-team.3Q2JmXhmJirgZc7AGRsF9e.html>; Mark Hughes, *Mark Hughes: Expect AlphaTauri Shocks, but Not in Its Design*, THE RACE (Feb. 28, 2021), <https://the-race.com/formula-1/mark-hughes-expect-alphatauri-shocks-but-not-in-its-design/> [https://perma.cc/6YZW-WFSQ].

71. See e.g., ALEX ALBON, <https://alexalbon.com> [https://perma.cc/74QB-8368] (last visited Mar. 16, 2021); Pierre Gasly, FORMULA 1, <https://www.formula1.com/en/drivers/pierre-gasly.html> (last visited Mar. 16, 2021); Yuki Tsunoda, FORMULA 1, <https://www.formula1.com/en/drivers/yuki-tsunoda.html> (last visited Mar. 16, 2021); Max Verstappen, FORMULA 1, <https://www.formula1.com/en/drivers/max-verstappen.html> (last visited Mar. 16, 2021).

72. See Noble, *supra* note 66.

73. This season the FIA will impose restrictions on team spending for the first time. The hope is that spending caps will aid competition and make the sport more sustainable. The 2021 limit is \$145 million, which drops to \$140 million in 2022, and \$135 million in 2023. See

A-teams currently operating above the cap to reassign engineers to customer B-teams, where that employee can continue to carry out the same tasks on the same transferable parts.⁷⁴ This allows A-teams to obtain up to three times the amount of testing data that independent teams can and lets A-teams work around the cost-cutting requirements of the upcoming spending cap.⁷⁵

These technical partnership arrangements are in stark contrast to the more traditional customer-factory team relationship.⁷⁶ Take McLaren, for instance. McLaren does not manufacture its own power unit, thereby making it the customer of a works team.⁷⁷ But McLaren does not purchase any additional transferable components from its engine supplier, insisting instead on designing and manufacturing every other aspect of the car itself.⁷⁸ Williams was, until recently, the only other independent customer team.⁷⁹ Shortly after the Williams family was driven to sell its once-triumphant team as a result of not being able to keep up with the spending of rival constructors, the new owners announced a decision to strengthen ties between Williams and its engine supplier Mercedes.⁸⁰ Williams will now purchase additional transferable components from Mercedes, making it Mercedes's second B-team.⁸¹

C. You Can Race, But You Can't Hide

"Listed" components are distinct from transferable components. Listed parts must be the constructor's own IP, meaning they have to be

Lawrence Barretto, *The 2021 F1 Cost Cap Explained – What Has Changed and Why?*, FORMULA 1 (May 27, 2020), <https://www.formula1.com/en/latest/article.the-2021-f1-cost-cap-explained-what-has-changed-and-why.5O1Te8udKLmkU14PyVZtUJ.html>.

74. See Noble, *supra* note 66.

75. See *id.*; Mitchell, *supra* note 51.

76. See Scott Mitchell, *McLaren/Williams in F1 "Void" Between Works Teams and B-Teams*, MOTORSPORT.COM (Jan. 12, 2019, 3:46 AM), <https://www.motorsport.com/f1/news/mclaren-williams-team-model-void/4322309/> [<https://perma.cc/BYK9-26S9>].

77. *Id.*

78. See Luke Smith, *2021 McLaren F1 Car "Essentially New" Due to Mercedes Engine Switch*, AUTOSPORT (Jan. 27, 2021, 3:56 AM), <https://www.autosport.com/f1/news/154766/2021-mclaren-essentially-new-due-to-mercedes-switch> [<https://perma.cc/9WCK-VYWV>].

79. Lawrence Barretto, *Analysis: Why Williams Have Strengthened Ties with Mercedes, and What It Means for the Future*, FORMULA 1 (Jan. 5, 2021), <https://www.formula1.com/en/latest/article.analysis-why-williams-have-strengthened-ties-with-mercedes-and-what-it-means.5zuTRRdJklU1oOw6nqo1lr.html>.

80. *Id.*

81. *Id.*; Elizabeth Blackstock, *Williams F1 Expands Its Technical Collaboration with Mercedes*, JALOPNIK (Jan. 10, 2021, 4:00 PM), <https://jalopnik.com/williams-f1-expands-its-technical-collaboration-with-me-1846025965>.

both designed and manufactured by each individual team.⁸² Constructors are not allowed to share or receive any information on listed parts, such as designs or data.⁸³

Aerodynamic components are the quintessential listed parts.⁸⁴ The success of an F1 car depends more on aerodynamics than it does on engine power.⁸⁵ Since the ten constructors rely on four power units among them,⁸⁶ aerodynamic performance is what really differentiates the cars on the track.⁸⁷ Aerodynamic components denote all parts of the race car that come into contact with the outside air—in other words, the car's bodywork.⁸⁸

But because most technical innovations in F1 are not patented, the IP protection for bodywork is very thin. For this reason, the FIA explicitly prohibits the sharing of any listed component information.⁸⁹ However, reverse engineering listed parts from rival cars has, until now, been allowed under sporting regulations.⁹⁰ And historically, F1 teams have certainly taken advantage of the ability to copy.⁹¹ Ron Dennis, McLaren's team principal until 2009, described the practice as such: "Spying is the wrong word, industrial espionage is probably a more appropriate expression."⁹² Although spying methodologies can be quite devious—tape measure-wielding infiltrators have been found under cars on multiple occasions⁹³—the most relied upon approach is

82. 2021 F1 Technical Regulations, *supra* note 52, at arts. 22.3.1–22.3.2.

83. *Id.* at art. 22.3.4.

84. *See id.* at art. 22.2.1.c.

85. Telephone Interview with James Key, Technical Director, McLaren Racing (Feb. 1, 2020); Telephone Interview with James Key, *supra* note 12; *see* The Secret Aerodynamicist, *Formula 1: The Secret Aerodynamicist Reveals Design Concepts*, BBC SPORT (Mar. 15, 2019), <https://www.bbc.com/sport/formula1/47527705> [<https://perma.cc/AFJ3-XWW4>]; Elizabeth Blackstock, *Formula One Wind Tunnels: Explained*, JALOPNIK (Nov. 22, 2020, 12:00 PM), <https://jalopnik.com/formula-one-wind-tunnels-explained-1845734903> [<https://perma.cc/Q5T3-MA2U>].

86. *See supra* text accompanying note 59.

87. Telephone Interview with James Key, *supra* note 12; The Secret Aerodynamicist, *supra* note 85.

88. 2021 F1 Technical Regulations, *supra* note 52, at arts. 1.4, 3; *see also id.* at app. 4.

89. *See id.* at art. 22.3.4.

90. *See* Gary Anderson, *Gary Anderson: How Reverse-Engineering in F1 Really Works*, THE RACE (Aug. 23, 2020), <https://the-race.com/formula-1/gary-anderson-how-reverse-engineering-in-f1-really-works/> [<https://perma.cc/7GHH-3ABM>].

91. *See* Dieter Rencken & Keith Collantine, *Claims Racing Point Built a Mercedes Clone Show "You Have to Think Before You Talk" – Steiner*, RACEFANS (Feb. 19, 2020, 8:31 PM), <https://www.racefans.net/2020/02/19/claims-racing-point-built-a-mercedes-clone-show-you-have-to-think-before-you-talk-steiner/> [<https://perma.cc/CG8N-F36N>].

92. *See* Hart, *supra* note 1.

93. *See id.*

the use of photography.⁹⁴ Constructors employ photographers whose entire job is to take detailed snapshots of rival cars.⁹⁵ More recently, team photographers have used 3D cameras to scan the bodywork, making it easier for engineers to duplicate components of the car.⁹⁶ The practice of photographing and copying cars is long-standing and commonplace in F1, but that does not mean that it is accepted with open arms.⁹⁷ Drivers and engineers have gone to great lengths to prevent their IP from leaking out,⁹⁸ even when up against FIA regulations that make hiding their creations from sleuths very difficult.⁹⁹ While F1 principals have differing viewpoints on the seriousness of the issue, there is agreement amongst constructors that the copycat car phenomenon is a product of FIA regulations.¹⁰⁰

D. A One-Mercedes Race

Although copying cars is not a sanctioned F1 practice, it is a practice governed by unspoken rules. In the 2020 season, Racing Point broke those rules by “cloning” the 2019 Mercedes race car, the W10.¹⁰¹ Racing Point is a Mercedes B-team because it gets its engine, hydraulics, and gearbox from the championship team and uses the

94. See *id.*

95. See *id.* For video of a recent example from the point of view of an F1 driver, see Formula 1 (@f1), INSTAGRAM (Dec. 11, 2020), <https://www.instagram.com/p/CIqYhUYp-Gs/>.

96. *Rival Used 3D Camera to Scan Mercedes Car*, PLANETF1 (Aug. 7, 2020), <https://www.planetf1.com/news/mercedes-rivals-3d-cameras/> [<https://perma.cc/R4UP-RG2L>].

97. See Jonathan Noble, *F1 to Outlaw Copycat Cars in 2021 to Prevent Racing Point-Style Designs*, AUTOSPORT (Aug. 7, 2020, 5:50 AM), <https://www.autosport.com/f1/news/151145/f1-to-outlaw-copycat-cars-from-next-year> [<https://perma.cc/7NUT-MNNQ>] (quoting Nikolas Tombazis, an FIA executive, who stated, “Copying has been taking place in Formula 1 for a long time. . . . People take photos and sometimes reverse engineer them and make similar concepts.”).

98. See Hart, *supra* note 1 (recounting when driver Michael Schumacher sat with his Ferrari for an hour at the 2002 British Grand Prix to ensure that “no one looked in the wrong way at [his] car”).

99. See Jonathan Noble, *F1 Teams No Longer Allowed to Hide Cars in Testing*, MOTORSPORT.COM (Dec. 5, 2019, 1:34 AM), <https://www.motorsport.com/f1/news/garage-screen-hide-cars-testing/4606965/> [<https://perma.cc/U5ND-L5PX>].

100. See Rencken & Collantine, *supra* note 91 (explaining that Haas and AlphaTauri team principals attribute the copying to FIA regulations); Mike Pryson, *Racing Point F1 Issue Is About So Much More than Brake Ducts*, AUTOWEEK (Aug. 15, 2020), <https://www.autoweek.com/racing/formula-1/a33612513/racing-point-f1-issue-is-about-so-much-more-than-brake-ducts/> [<https://perma.cc/RG8Z-FERY>] (describing how McLaren, Renault, and Ferrari team principals also blame FIA regulations for design copying).

101. See Luke Smith, *Seidl: F1 Risks Becoming “Copying Championship” with Racing Point Model*, AUTOSPORT (July 17, 2020, 4:49 AM), <https://www.autosport.com/f1/news/150629/racing-point-model-risks-a-copying-championship> [<https://perma.cc/Y3F6-3JVB>].

Mercedes wind tunnel for aerodynamic testing.¹⁰² In 2018 and 2019, Racing Point also obtained design data for its front brake ducts from Mercedes.¹⁰³ Brake ducts had been transferable components prior to the 2020 season, at which point the FIA designated them to be listed parts.¹⁰⁴ This regulation change meant that every team was required to develop its brake ducts independently, without relying on the IP of works teams. But instead of starting from scratch, Racing Point manufactured both its front and rear brake ducts relying on its 2019 model, which had been designed by Mercedes.¹⁰⁵ Notably, FIA regulations did not address how or to what extent teams were to “design around” newly listed parts that had been purchased from works teams in previous seasons when brake ducts were transferable.¹⁰⁶ Although operating within a gray area, Racing Point was sanctioned for breaking sporting regulations.¹⁰⁷ This outcome can be attributed to the fact that, in addition to being a Mercedes customer and relying on Mercedes’s brake duct data, Racing Point further copied the design of the W10 to such a degree that it was quickly dubbed the “Pink Mercedes” by F1 commentators (Racing Point’s team color is pink).¹⁰⁸ Racing Point maintains that the extensive similarities between its car and the W10 were the product of reverse engineering, but rival teams impugn this, insisting that critical aspects of the car, which go to its “concept,” cannot be correctly copied from photographs because they are not outwardly

102. Dieter Rencken & Keith Collantine, *Racing Point to Use Mercedes Wind Tunnel*, RACEFANS (Apr. 8, 2019, 12:59 PM), <https://www.racefans.net/2019/04/08/racing-point-to-use-mercedes-wind-tunnel/> [<https://perma.cc/S2TH-Q8JR>].

103. See Dominic Tobin, *What Racing Point Did Wrong: Brake Duct Penalty Explained*, MOTOR SPORT MAG., <https://www.motorsportmagazine.com/articles/single-seaters/f1/what-racing-point-did-wrong-brake-duct-penalty-explained> [<https://perma.cc/9B65-DWCS>] (Dec. 3, 2020).

104. See Thomas Maher, *Why Racing Point’s Legal Brake Ducts Break the Rules*, FORMULA SPY (Aug. 7, 2020), <https://formulaspy.com/f1/why-racing-points-legal-brake-ducts-break-the-rules-70418> [<https://perma.cc/GA42-ZYFD>].

105. See *id.*

106. See *id.*

107. See *id.* For further details on the Racing Point brake duct saga, see Tobin, *supra* note 103.

108. See Jake Boxall-Legge, *Why Racing Point’s ‘Copycat’ Shouldn’t Be Controversial*, AUTOSPORT (Apr. 11, 2020, 10:03 AM), <https://www.autosport.com/f1/feature/10038/why-racing-point-copycat-shouldnt-be-controversial>; Jake Boxall-Legge, *How Racing Point Is Gambling on a Mercedes-Inspired Design*, AUTOSPORT (Feb. 19, 2020, 8:35 AM), <https://www.autosport.com/f1/feature/9913/how-racing-point-is-gambling-on-a-mercedes-inspired-design>.

discernable.¹⁰⁹ Prominent figures within F1 accused Mercedes and its B-team of collusion.¹¹⁰

The “Pink Mercedes” controversy has forced F1 to reflect on the extent to which copying has infiltrated the sport. Amidst fears that the racing series would become a “copying championship,”¹¹¹ the FIA approved amendments for the 2021 regulations that “prevent the extensive use of reverse engineering of rival designs for the design of a car’s aerodynamic surfaces.”¹¹² The new regulations state that teams cannot design listed components by reverse engineering rival cars, but can still be inspired by the designs and creations of competitors.¹¹³ Banned reverse engineering measures include 3D cameras, noncontact surface scanning, and any software that facilitates data extraction from photographic images.¹¹⁴ If the FIA decides that a listed component “closely resemble[s]” that of a competitor, teams will be asked to provide evidence that demonstrates the component was independently created.¹¹⁵

II. TRADE SECRECY IN F1

Trade secrets can be comprised of a wide variety of subject matter.¹¹⁶ There is no exact definition, but the typical requirements are that the IP must derive independent economic value by virtue of being generally unknown in the industry and not easily ascertainable.¹¹⁷ The holder of the trade secret must also expend reasonable efforts in

109. See Martin Brundle, *Martin Brundle Column: Tyres and Tensions at 70th Anniversary GP*, SKY SPORTS, <https://www.skysports.com/f1/news/12433/12047020/martin-brundle-column-tyres-and-tensions-at-70th-anniversary-gp> [https://perma.cc/CW2C-RGBN] (Aug. 11, 2020, 8:30 PM).

110. Dieter Rencken & Keith Collantine, *Former Team Boss Claims Racing Point Received Mercedes Wind Tunnel Model and Show Car*, RACEFANS (Aug. 17, 2020, 12:47 PM), <https://www.racefans.net/2020/08/17/former-f1-team-boss-racing-point-mercedes-wind-tunnel-model-show-car/> [https://perma.cc/6CBV-X3HW].

111. See Smith, *supra* note 101 (discussing McLaren team principal Andreas Seidl’s concern that F1 risks becoming “a copying championship”); Noble, *supra* note 97 (capturing FIA executive Nikolas Tombazis’s position that “[w]e don’t want next year to have eight or ten Mercedes or copies of Mercedes”).

112. See Phillip van Osten, *FIA Rubber-Stamps 2021 Rules Banning ‘Reverse Engineering,’* F1.COM (Oct. 10, 2020, 9:47 AM), <https://f1.com/news/386497-fia-rubber-stamps-2021-rules-banning-reverse-engineering.html> [https://perma.cc/4THP-2LFZ].

113. See Dominic Tobin, *How Racing Point Loophole Is Closed with 2021 F1 Regulations*, MOTOR SPORT MAG. (Nov. 5, 2020), <https://www.motorsportmagazine.com/articles/single-seaters/f1/how-racing-point-loophole-is-closed-with-2021-f1-regulations> [https://perma.cc/2LDR-HF86].

114. *2021 F1 Technical Regulations*, *supra* note 52, at art. 22.3.3.

115. *Id.*

116. See UTSA, *supra* note 15, § 1(4).

117. See *id.* § 1(4)(i).

maintaining its secrecy.¹¹⁸ But despite its broad scope, trade secret law bestows a very thin veil of protection. First of all, the same trade secret can theoretically be used simultaneously by multiple entities, as long as the information remains *mostly* unknown.¹¹⁹ Relatedly, if a competitor independently ascertains a trade secret, there is no cause of action against the discoverer.¹²⁰ This means the trade secret holder cannot enjoin the independent discoverer from exploiting the information.¹²¹ And lastly, successful reverse engineering of trade secrets is perfectly legal.¹²² It is thus the burden of the trade secret holder to maintain the confidentiality of the IP if he or she wishes to keep it.¹²³ A trade secret holder's legal recourse is generally restricted to claims against someone who breached a contractual duty (e.g., a nondisclosure agreement), or who discovered the trade secret by "improper means" (e.g., theft).¹²⁴

The justification for the limited scope of trade secret liability rests in society's interest in spurring competition through investment in innovation.¹²⁵ Hence the legal exception for reverse engineering—those that expend effort in discovering the trade secret by their own merits are rewarded with the right to exploit it. By extension, once it is widely known, a trade secret ceases to exist.¹²⁶ Conversely, trade secrets can theoretically exist in perpetuity if never revealed.¹²⁷

A. F1 Trade Secrets Are Particularly Susceptible to Misappropriation

Best practices for maintaining the confidentiality of trade secrets are generally classified into three categories: physical security (storing information in a secure environment and restricting access to

118. *Id.* § 1(4)(ii).

119. See *Frequently Asked Questions: Trade Secrets*, WORLD INTELL. PROP. ORG., https://www.wipo.int/tradesecrets/en/tradesecrets_faqs.html [<https://perma.cc/G5MB-YJ5J>] (last visited Nov. 9, 2020).

120. UTSA, *supra* note 15, § 1 cmt. 1.

121. See *id.* §§ 1(2), 1 cmt. 1, 2(a).

122. See *id.* § 1 cmt. 2.

123. Michael J. Kasdan, Kevin M. Smith & Benjamin Daniels, *Trade Secrets: What You Need to Know*, NAT'L L. REV. (Dec. 12, 2019), <https://www.natlawreview.com/article/trade-secrets-what-you-need-to-know> [<https://perma.cc/7DC5-Y53C>].

124. *Id.*

125. TRIPS, *supra* note 15, at art. 7 ("[I]ntellectual property rights should contribute . . . to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.").

126. See Kasdan et al., *supra* note 123.

127. Bobby G. Hampton & Esha Bandyopadhyay, *Trade Secrets and Patents: Similarities, Differences, and Interplay*, FISH & RICHARDSON (July 17, 2020), <https://www.fr.com/trade-secrets-patents-similarities-differences-interplay/> [<https://perma.cc/L7K5-VDAM>].

authorized personnel), legal security (nondisclosure, noncompetition, and nonuse agreements), and digital security (password protection and data encryption).¹²⁸ While these practices are capable of protecting trade secrets to a certain extent in any normal business environment, their operational effectiveness in F1 is particularly limited.

1. Physical Security

Despite their reputation for covertness, F1 teams are uniquely vulnerable to trade secret exposure. In *E.I. duPont deNemours & Co. v. Christopher*, the US Court of Appeals for the Fifth Circuit held that, under Texas law, discerning a trade secret without investing the efforts and expenses necessary to independently discover it is presumptively an “improper means” of discovery unless the original holder failed to take reasonable precautions in maintaining the secret’s confidentiality.¹²⁹ Here, the defendant utilized aerial photography to obtain pictures of duPont’s chemical plant that would have enabled someone to reverse engineer duPont’s secret methanol manufacturing process.¹³⁰ In finding defendants liable for industrial espionage, the court drew a line between its “devotion to free wheeling industrial competition” and “accepting the law of the jungle as the standard of morality.”¹³¹ In reaching this conclusion, the court conducted a cost-benefit analysis.¹³² On the one hand, surveillance of competitors’ business practices generates market improvements and efficiencies. On the other hand, requiring an enterprise to scrupulously hide every aspect of its operation imposes onerous costs. Society would prefer those expenditures be devoted to research and development of intellectual products. Additionally, consumers would benefit more if the spying entity focused its efforts on independent innovation instead of on copying the preexisting procedures of competitors.

Despite the parallels between *duPont*’s illicit aerial photographers and the industrial espionage of F1, the Fifth Circuit and the FIA have approached their respective problems with drastically different methodologies. F1 constructors go to extreme efforts to protect their technical developments from unwanted surveillance.¹³³ Therefore, under the *duPont* reasoning, any acquisition of a team’s trade secrets

128. Kasdan et al., *supra* note 123.

129. See *E.I. duPont deNemours & Co. v. Christopher*, 431 F.2d 1012, 1015–16 (5th Cir. 1970).

130. *Id.* at 1016.

131. *Id.*

132. *Id.* at 1016–17.

133. Hart, *supra* note 1.

that did not arise from independent devotion of time and money is misappropriation. Yet until the Racing Point saga, the FIA had historically declined to crack down on this means of discovery, barring the most extreme cases that involved theft of confidential documents.¹³⁴

Despite the fact that this practice of industrial espionage is widely known within F1,¹³⁵ the FIA has recently made it even more difficult for teams to protect their trade secrets by extending the ban on screens and coverings that “obscure any part of a car . . . in the paddock, garages, pit lane or grid” to include preseason testing.¹³⁶ Previously, the rule only applied to Grand Prix weekends.¹³⁷ This is significant because the paddock, grid, pit lane, and garage, all of which are off-track, are where the cars are most accessible to third parties, and therefore, vulnerable to exposure. This is in part due to the sport’s physical requirements, which necessitate that teams operate in close proximity to each other—the garages must all abut the pit lane, for instance. But it is also a consequence of the FIA regulations. For example, before and after each race, the cars are held on a “dummy grid” known as *parc fermé* (French for “closed park”).¹³⁸ *Parc fermé* is a sectioned-off area of the paddock where FIA officials inspect the cars for regulation conformity.¹³⁹ FIA scrutineers can order that the cars be dismantled in *parc fermé* in order to ensure technical compliance, either of their own volition or upon protest by rival teams.¹⁴⁰ Only FIA officials can be within the post-race *parc fermé*,¹⁴¹ but team members and the media can stand along the fenced area to observe the inspections.¹⁴² Because

134. See Brad Spurgeon, *McLaren Fined \$100 Million in Formula One Spying Scandal*, N.Y. TIMES (Sept. 13, 2007), <https://www.nytimes.com/2007/09/13/sports/13iht-prix.5.7500107.html> [<https://perma.cc/YF5J-A46K>].

135. See *F1’s Dark Secret: Teams Hire Photographers for Season to Spy on Rivals’ Cars*, BUS. STANDARD, https://www.business-standard.com/article/news-ani/f1-s-dark-secret-teams-hire-photographers-for-season-to-spy-on-rivals-cars-115031500257_1.html [<https://perma.cc/EE9M-26ML>] (Mar. 15, 2015, 1:28 PM).

136. Noble, *supra* note 99.

137. See *id.*

138. See Balazs Szabo, *F1 Explained: Parc Ferme*, F1 TECH. (July 11, 2018, 6:01 PM), <https://www.f1technical.net/news/21724> [<https://perma.cc/7Q3A-7BWY>]; 2021 *F1 Sporting Regulations*, *supra* note 19, at arts. 34, 44.

139. Szabo, *supra* note 138; *F1 Drivers Explain F1: What Is Parc Ferme?*, FORMULA 1 (June 29, 2020), https://www.formula1.com/en/video/2020/6/F1_Drivers_Explain_F1_What_is_parc_ferme_.html.

140. 2021 *F1 Sporting Regulations*, *supra* note 19, at arts. 14.3, 25.5(b); *International Sporting Code*, FÉDÉRATION INTERNATIONALE DE L’AUTOMOBILE, at art. 13.4.3 (Jan. 18, 2021), https://www.fia.com/sites/default/files/2021_international_sporting_code_fr-en_clean_18.01.2021_0.pdf [<https://perma.cc/97HM-MHGW>].

141. 2021 *F1 Sporting Regulations*, *supra* note 19, at art. 44.1.

142. Kym Illman, *Photographing Formula 1 Parc Ferme*, YOUTUBE (Oct. 6, 2019), <https://www.youtube.com/watch?v=ujSsV6BO2aE>.

drivers and constructors are unable to shield parts of the car from unwanted eyes during this time,¹⁴³ this presents a golden opportunity for spying.¹⁴⁴

2. Legal Security

It is not just the cars themselves that pose a threat to trade secrets. Human capital is also a major concern. Because the world of F1 is so small, employee movement between teams is very common.¹⁴⁵ This practice can be especially provocative when the employees being poached are FIA officials, who are privy to vast amounts of confidential constructor information.¹⁴⁶ For this reason, teams can and do include restrictive covenants in their employment contracts. The use of “garden leave” is particularly ubiquitous.¹⁴⁷ Garden leave originated in England in the late 1980s in response to English courts’ distaste for how the law of noncompetes treated breach of notice provisions in employment contracts.¹⁴⁸ During garden leave as developed under English law, employees are relieved from all or some of their duties but remain at the firm as paid employees—thus still bound by the duty of

143. Phillip van Osten, *Newey Reveals His Sneaky Trick for Spying on Ferrari*, F1I.COM (July 11, 2017, 8:18 AM), <https://f1i.com/news/284922-newey-reveals-sneaky-trick-piercing-ferraris-secrets.html> [<https://perma.cc/7ZUF-Z62N>].

144. *Id.* (quoting Red Bull’s Chief Technical Officer stating, “If I really want to look at a car, I need only wait until . . . parc fermé, where nobody’s allowed to touch them for an hour. They’re often parked right under your nose, and with all the mechanics busy packing up, you can look at them as much as you like.”).

145. *See, e.g., James Allison*, MERCEDES-AMG PETRONAS FORMULA ONE TEAM, <https://www.mercedesamgf1.com/en/team/management/james-allison/> [<https://perma.cc/BZR9-E9GB>] (last visited Jan. 29, 2021) (tracing Allison’s career trajectory, which started in 1991 as an engineer at Benetton, then Larrousse, then back to Benetton, then to Ferrari, then back to Benetton again (at this point called Renault), then back again to Ferrari, and now finally at Mercedes).

146. *See* Nate Saunders, *McLaren ‘Very Unhappy’ at Ferrari’s Signing of FIA Chief Laurent Mekies*, ESPN, https://www.espn.in/espn/story/_/id/22789357/mclaren-very-unhappy-ferrari-signing-fia-chief-laurent-mekies?device=featurephone [<https://perma.cc/U7NC-2TH8>] (last visited Mar. 14, 2021).

147. *See* Elliot Wood, *Gardening Leave: The Revolving Door F1 Should Be Worrying About*, READ MOTORSPORT, <https://readmotorsport.com/2018/07/04/gardening-leave-the-revolving-door-f1-should-be-worrying-about/> [<https://perma.cc/V66V-HVLA>] (last visited Mar. 14, 2021).

148. Charles A. Sullivan, *Tending the Garden: Restricting Competition via “Garden Leave,”* 37 BERKELEY J. EMP. & LAB. L. 293, 300–01 (2016) (tracing the origin of the concept and discussing its development in English case law). This Note focuses on the English variant of garden leave because, as of 2021, six of the ten F1 teams are based in the United Kingdom. *See Where Are Formula One Teams Based?*, SPORTSKEEDA, <https://www.sportskeeda.com/f1/where-are-f1-teams-based> [<https://perma.cc/7V6X-8XXL>] (last visited Mar. 20, 2021).

loyalty—and are therefore unable to work for a competitor.¹⁴⁹ Since these employees still receive wages during the garden leave period, these covenants face less judicial scrutiny for unfairness.¹⁵⁰ Garden leave provisions are often used in lieu of noncompetes because garden leaves are more likely to be enforced by courts.¹⁵¹ This type of leave, often just three to six months, is generally shorter than noncompete restrictions.¹⁵² Mercedes, though, imposes garden leave periods of up to two years.¹⁵³ Teams operating on smaller budgets cannot impose such lengthy garden leave periods since they are essentially paying someone to not work.¹⁵⁴

Teams have complained that Mercedes's restrictive covenants are "aggressive" and unfairly "block the system" of workflow.¹⁵⁵ Renault, for example, working on a budget that is 56 percent of Mercedes's,¹⁵⁶ has had to rely heavily on recruiting younger, less experienced engineers because of the lengthy restrictions that tie up Mercedes's employees.¹⁵⁷ Not only do such restrictions widen the gap between the top-tier and midfield teams in a purely work-product sense (more experienced engineers generally develop better products), but they also give teams like Mercedes a competitive edge in protecting their trade secrets. By requiring its employees to remain at Mercedes in a non-F1 position (such as road car development) for two years, Mercedes ensures that its F1 trade secrets remain within the firm and away from rival teams. By the time the garden leave period is up, most

149. See Sullivan, *supra* note 148, at 295–96; Peter A. Steinmeyer & Lauri F. Rasnick, *Garden Leave Provisions in Employment Agreements*, THOMSON REUTERS PRAC. L. 2, <https://www.ebglaw.com/content/uploads/2020/10/Steinmeyer-Rasnick-October-2020-Garden-Leave-Provisions-in-Employment-Agreements-w-007-3506.pdf> [https://perma.cc/JFF2-5NDJ] (Oct. 2020).

150. See Sullivan, *supra* note 148, at 296 ("[D]eparting employees . . . who would prefer to forgo the garden for competitive activity are not likely to be viewed as sympathetically by courts as compared to workers whose noncompetition agreements leave them with no income for the restricted term. Further, because an employer pays for the leave and therefore has some skin in the game, a court might find this arrangement more legitimate and less prone to employer overreach than a typical noncompete agreement.").

151. See *id.* at 322 ("Garden leave provides a clear legal advantage for employers in shifting the balance of hardships in preliminary injunction proceedings, the normal setting in which noncompetes are enforced.").

152. See Steinmeyer & Rasnick, *supra* note 149, at 2.

153. See Wood, *supra* note 147 ("Gardening leave is used in F1 to restrict the spread of specialist information, often technical, when employees switch between teams.").

154. *Id.*; Jonathan Noble, *Renault: Long Mercedes Gardening Leave Spells Are 'Unfair,'* MOTORSPORT.COM (Oct. 22, 2017, 5:33 AM), <https://www.motorsport.com/f1/news/renault-long-mercedes-gardening-leave-spells-are-unfair-968866/3053560/> [https://perma.cc/TU6B-KCS9].

155. Noble, *supra* note 154.

156. See Fair, *supra* note 4.

157. See Noble, *supra* note 154.

of the confidential race information that the Mercedes employees have will be outdated. In contrast, when a Renault engineer leaves to work for another team, Renault has only three months to keep that employee away from rivals. That means Renault's IP is still fresh in the employee's memory and much more likely to be competitively relevant from a race innovation standpoint.

Even lengthy garden leave periods fail to outlast the lifespan of some constructor IP, though. Unlike the rapid rate of team technical innovations, testing methodologies remain much more constant, and therefore, immune to garden leave protection.¹⁵⁸ Constructors consider aerodynamic testing methods to be a valuable form of team IP, given the significance of a car's aerodynamic performance.¹⁵⁹ Consequently, constructors have a strong interest in keeping this information away from rivals. Of course, departing engineers and drivers are still bound by their former employer's nondisclosure agreement (NDA), but enforcement of an NDA is not a de facto safeguard to trade secret misuse.¹⁶⁰ At the outset, NDAs cannot restrict employees from making use of all of the information and education they obtained throughout the course of employment.¹⁶¹ The "general skill and knowledge" acquired while working in a particular industry falls outside the bounds of trade secret protection; therefore, the employee can continue to use this information in subsequent ventures.¹⁶² However, drawing a line between protected "know-how" and unprotected "general skill or

158. Telephone Interview with James Key, *supra* note 12.

159. *Id.*

160. *Greenberg v. Croydon Plastics Co.*, 378 F. Supp. 806, 814 (E.D. Pa. 1974) ("Plaintiffs in trade secret cases, who must prove by a fair preponderance of the evidence disclosure to third parties and use of the trade secret by the third parties, are confronted with an extraordinarily difficult task. Misappropriation and misuse can rarely be proved by convincing direct evidence. In most cases plaintiffs must construct a web of perhaps ambiguous circumstantial evidence from which the trier of fact may draw inferences which convince him that it is more probable than not that what plaintiffs allege happened did in fact take place. Against this often delicate construct of circumstantial evidence there frequently must be balanced defendants and defendants' witnesses who directly deny everything.").

161. See, e.g., Gregory S. Bombard & Adam M. Santeusano, *Distinguishing Employees' "General Skill or Knowledge" from Protectable Trade Secrets Under Massachusetts Law*, BOSTON BAR J. (Aug. 15, 2018), <https://bostonbarjournal.com/2018/08/15/distinguishing-employees-general-skill-or-knowledge-from-protectable-trade-secrets-under-massachusetts-law/> [<https://perma.cc/7GZW-99R5>] ("[A]n employer may not claim trade secret protection over an employee's general skill or knowledge regardless of whether the employee developed it prior to or during his employment.").

162. *Id.*; see also Orly Lobel, *NDAs Are Out of Control. Here's What Needs to Change*, HARV. BUS. REV. (Jan. 30, 2018), <https://hbr.org/2018/01/ndas-are-out-of-control-heres-what-needs-to-change> [<https://perma.cc/6JFT-FG4Y>] ("[P]laintiffs in trade secrecy litigation frequently try to claim . . . general know-how as protected trade secrets. However, judges are rightly skeptical.").

knowledge” is anything but straightforward.¹⁶³ Because of this, employers seeking redress for trade secret misappropriation often face an uphill battle.¹⁶⁴ Liability can be difficult to establish because it requires countering the defendant’s affirmative defense of independent development with direct or strong circumstantial evidence that the trade secret was used.¹⁶⁵

In recognition of this fact, some jurisdictions have adopted the “inevitable disclosure doctrine,” which allows courts to enjoin an employee from taking a similar position with a competitor in the absence of a noncompetition agreement and without evidence of trade secret misappropriation.¹⁶⁶ This is because the *threat* of misappropriation is so great given the overlap in job requirements.¹⁶⁷ The underlying rationale is that it is impossible to compartmentalize trade secrets when an employee’s new job is so closely related to his or her previous job.¹⁶⁸ Therefore, even if done unintentionally, reliance on and use of that information is a foregone conclusion.¹⁶⁹

Inevitable disclosure claims have had the most success when brought against high-level employees who had access to and knowledge of the firm’s valuable information.¹⁷⁰ It is unlikely that employees in

163. Bombard & Santeusano, *supra* note 161 (“Although the general skill or knowledge doctrine is widely cited in Massachusetts case law, no court has articulated a test for distinguishing between protectable trade secrets and nonprotectable general skill or knowledge.”); Lobel, *supra* note 162 (“[N]ot all courts are diligent in policing the lines between general knowledge and confidential information.”).

164. See *Greenberg*, 378 F. Supp. at 814; *Outsource Int’l, Inc. v. Barton*, 192 F.3d 662, 670 (7th Cir. 1999) (Posner, J., dissenting) (citations omitted) (“[W]here the employee’s work gives him access to the employer’s trade secrets[, t]he employer could include in the employment contract a clause forbidding the employee to take any of the employer’s trade secrets with him when he left the employment. . . . Such clauses are difficult to enforce, however, as it is often difficult to determine whether the former employee is using his former employer’s trade secrets or using either ideas of his own invention or ideas that are in the public domain.”).

165. *Greenberg*, 378 F. Supp. at 814; see *Outsource Int’l*, 192 F.3d at 670 (Posner, J., dissenting) (citations omitted); cf. *Stratienko v. Cordis Corp.*, 429 F.3d 592, 601 (6th Cir. 2005) (footnote omitted) (“[R]equiring direct evidence would foreclose most trade-secret claims from reaching the jury because corporations rarely keep direct evidence of their use ready for another party to discover. Caselaw from other circuits thus suggests that Tennessee law would most likely permit circumstantial evidence of use in trade-secret cases.”).

166. Jeffrey S. Klein & Gregory Silbert, *The Inevitable Disclosure of Trade Secrets: The Rebirth of a Controversial Doctrine and Where the Courts Stand*, 4 BLOOMBERG L. REPS. – LAB. & EMP., no. 3, 2010, at 1–2, https://www.weil.com/~media/files/pdfs/inevitable_disclosure [<https://perma.cc/C8EJ-7ZVM>].

167. *Id.*

168. *Id.*

169. *PepsiCo, Inc. v. Redmond*, 54 F.3d 1262, 1269–70 (7th Cir. 1995).

170. See *id.*; compare *Bimbo Bakeries USA, Inc. v. Botticella*, 613 F.3d 102, 105, 119 (3d Cir. 2010) (enjoining senior executive from working for former employer’s competitor), with *Colorcon, Inc. v. Lewis*, 792 F. Supp. 2d 786, 803 (E.D. Pa. 2011) (citing *Bimbo Bakeries*, 613 F.3d

these situations can “unlearn” all of the confidential information that they gained throughout their employment.¹⁷¹ In the context of F1, overlap in job responsibilities and high exposure to trade secrets are both acute concerns. Most of the team employees are highly specialized engineers working directly on the design, operation, and development of race technology.¹⁷² Because working on an F1 car requires an exceptional level of expertise, F1 engineers and technicians are highly sought after by rival teams, usually *because* of the knowledge these employees acquired from working with competitors.¹⁷³ And often the employees being poached are the exact engineers who developed the innovative technology that the constructors are seeking to protect.¹⁷⁴ It is therefore not illogical to presume that, for example, the engineer who designed Ferrari’s front wings would inevitably rely on that knowledge when subsequently designing the bodywork for McLaren.

3. Data Security

In addition to the race cars and personnel, team computers and the telemetry system, which transmits data from the car’s sensors to the pit and team headquarters, are vulnerable to trade secret misappropriation as well. Mercedes was victim to such a data breach in 2015 when it discovered that one of its engineers who was leaving for Ferrari had accessed confidential race information during his garden leave period when he had been assigned to the company’s road car sector.¹⁷⁵ Outside attempts to hack the telemetry systems of rival constructors are also not unheard of.¹⁷⁶ Team principals have anonymously admitted to such sinister activity.¹⁷⁷ Teams go to great

at 105) (“Lewis certainly poses substantially less risk to Colorcon than the defendant in *Bimbo Bakeries*. In that case, the defendant was a high-level executive who was one of only a select few at the company with access to certain confidential information.”).

171. See *02 Micro Int’l Ltd. v. Monolithic Power Sys., Inc.*, 399 F. Supp. 2d 1064, 1070 (N.D. Cal. 2005) (quoting *Gen. Elec. Co. v. Sung*, 843 F. Supp. 776, 780 (D. Mass. 1994)); *UtiliSave, LLC v. Miele*, No. 10729-VCP, 2015 WL 5458960, at *9 (Del. Ch. Sept. 17, 2015).

172. See Matt Youson, *The Insider’s Guide to . . . Technical Directors*, FORMULA 1 (Jan. 20, 2020), <https://www.formula1.com/en/latest/article.the-insiders-guide-to-technical-directors.5JhKdiv5Obj6lET0h7cYY4.html>.

173. See Noble, *supra* note 154.

174. See Jonathan Noble, *Renault Signs Mercedes Design Engineer as New Deputy Chief Designer*, AUTOSPORT (June 14, 2018, 5:44 AM), <https://www.autosport.com/f1/news/136738/renault-signs-senior-mercedes-design-engineer> [<https://perma.cc/8WFH-984B>].

175. See Patrick Gower, *Mercedes Sues Ferrari-Bound F1 Engineer for Data Theft*, BLOOMBERG, <https://www.bloomberg.com/news/articles/2015-12-08/mercedes-sues-f-1-engineer-for-data-theft-before-move-to-ferrari> [<https://perma.cc/NY6H-AWYP>] (Dec. 8, 2015, 1:26 PM).

176. See Hart, *supra* note 1.

177. *Id.*

lengths to secure their data through code encryption, security compliance requirements, and device usage policies.¹⁷⁸ But as in any industry, cybersecurity in F1 is an imperfect science. And F1 teams are at higher risk of data breaches than traditional corporations because data security technologies must be taken down and reconstructed in a different location every week during the season.¹⁷⁹ Reconnecting these security systems at each Grand Prix track is particularly tricky because different countries rely on different internet service providers.¹⁸⁰

B. The Ban on Reverse Engineering Will Not Resolve F1's Copying Problem

While the FIA's anti-reverse engineering regulation amendment has the potential to reduce some copying, it fails to address the sport's real problem—that is, the prevalence of A-B team relationships. Because the FIA approach does not limit the extent to which constructors can collaborate in the first place, it exacerbates, rather than prevents, the shortcomings of trade secret protection in F1. Principally, the FIA solution is a “wait-and-see” tactic, meaning that it address illicit reverse engineering after the fact.¹⁸¹ The problem with this approach is twofold. First, trade secrets lose their value once they have been misappropriated, so ex post recourse often leaves the plaintiff less than whole.¹⁸² This “once lost, lost forever”¹⁸³ predicament is especially germane to F1, where the difference between placing first or fourth can regularly depend on milliseconds, and therefore, even

178. Robert S. Shwartz & Kayvan Ghaffari, *Trade Secrets in the Fast Lane - Formula One and the Importance of Trade Secret Protection*, LEXOLOGY (Dec. 23, 2015), <https://www.lexology.com/library/detail.aspx?g=61b33bac-8e90-42ca-8747-a3ab0c637aea> [https://perma.cc/XUH3-GL84].

179. See Darktrace, *Behind the Scenes: Darktrace at Imola Grand Prix*, VIMEO (Dec. 6, 2020, 5:19 PM), <https://vimeo.com/487889840> (showing how McLaren implements data protection measures with cybersecurity partner Darktrace).

180. See *id.*

181. See Tobin, *supra* note 113 (“If one listed part ‘closely resembles’ that of another team, then an investigation can be prompted. In an era where cars are largely differentiated by their paint scheme, the loosely-worded regulations could lead to a wave of challenges at the first race of 2021.”).

182. See *Frequently Asked Questions: Trade Secrets*, *supra* note 119; Marc J. Pensabene & Christopher E. Loh, *How to Assess Trade Secret Damages*, VENABLE (June 2006), <https://www.venable.com/-/media/how-to-assess-trade-secret-damages.pdf> [https://perma.cc/35QD-6KRM].

183. *Latest Updates on Federal Trade Secrets Legislation*, SEYFARTH: TRADING SECRETS, <https://www.tradesecretslaw.com/latest-update-on-federal-trade-secret-legislation/> [https://perma.cc/7RE9-J3G9] (last visited Mar. 15, 2021).

miniscule technological advantages can be of real consequence.¹⁸⁴ Second, as discussed earlier, establishing trade secret misappropriation is notoriously difficult,¹⁸⁵ and particularly so in environments like F1, where employees often leave to work for rivals, taking their “general skill and knowledge” with them.¹⁸⁶ A plaintiff-constructor’s burden is made even heavier by the new FIA regulation because it allows teams to be “influenced” by the design and concept of competitors’ listed components but does not elaborate on when influence goes too far.¹⁸⁷ This affords defendant-constructors a significant gray area to exploit.

Moreover, the new FIA restrictions apply only to listed parts¹⁸⁸—namely, aerodynamic components, since a car’s bodywork is most visible to spectators and thus, most at risk of being copied.¹⁸⁹ But, as evidenced by the Racing Point “Pink Mercedes” saga, aerodynamics are only a part of the equation as F1 clone cars would not be possible without transferable components and some knowledge of testing methodologies.¹⁹⁰ These elements, working together, provide a complete picture, or “concept,” of the car.¹⁹¹

Some might argue that the reverse engineering constraints, in combination with the Racing Point cautionary tale, will sufficiently incentivize independent creation and thwart would-be copiers. This belief is misguided. Since the FIA’s announcement of the new regulation, F1 has already lost what was one of its last remaining independent customer teams, Williams, to the B-team phenomena.¹⁹² As it stands, only two of the ten constructors are not involved in A-B team partnerships: McLaren, the sole independent customer team, and Renault (racing under the name Alpine in 2021), the sole independent works team.¹⁹³ The increasing prevalence of A-B teams threatens to eradicate the independent constructor business model.¹⁹⁴ But

184. See Ross Messinger, *The Lesser Known Race: Every Second Counts for F1 Pit Crews*, BLEACHER REP. (Mar. 11, 2010), <https://bleacherreport.com/articles/360819-the-lesser-known-race-every-second-counts-for-f1-pit-crews> [<https://perma.cc/XM2R-3V4H>].

185. See *Greenberg v. Croydon Plastics Co.*, 378 F. Supp. 806, 814 (E.D. Pa. 1974).

186. The inevitable disclosure doctrine was created in recognition of this fact. See *PepsiCo, Inc. v. Redmond*, 54 F.3d 1262, 1269–70 (7th Cir. 1995); *Bombard & Santeusano*, *supra* note 161.

187. 2021 F1 Technical Regulations, *supra* note 52, at art. 22.3.3.

188. 2021 F1 Sporting Regulations, *supra* note 19, at art. 6.3.

189. Brundle, *supra* note 109 (“[E]minent people in the [F1] paddock assure me that it’s not possible to accurately copy critical details of the car which are not easily visible.”).

190. See *id.*; Rencken & Collantine, *supra* note 110.

191. See Brundle, *supra* note 109; Rencken & Collantine, *supra* note 110.

192. See Barretto, *supra* note 79.

193. See Mitchell, *supra* note 76; Mitchell, *supra* note 51.

194. Telephone Interview with James Key, *supra* note 12; see Mitchell, *supra* note 76; Mitchell, *supra* note 51; Noble, *supra* note 66.

without independent constructors, F1 races cannot amount to genuine competitions. Rather, the races would be comprised of two competitions: a first fight for podium position between A-teams and a secondary battle between B-teams. This is because the B-team business model is not a business model that is designed to win.¹⁹⁵ B-teams will always be a step behind A-teams because B-teams are not in control of their own destiny; they are not privy to the reasoning behind the designs of parts they receive from A-teams.¹⁹⁶ This puts B-teams at a meaningful disadvantage because they have to design the car's aerodynamics around the purchased parts without an understanding of the components' "concept."¹⁹⁷ Therefore, in a competition comprised of ten teams, half of the participants are eliminated before the race has even begun.

In F1, no competition is equivalent to no innovation; the competition and the IP are one and the same.¹⁹⁸ For this reason, the FIA must drive independent constructor innovation by limiting working-customer team partnerships.

III. CONSTRUCTOR COLLABORATION HARMS COMPETITION

Extensive collaboration between A- and B-teams facilitates copying, which diminishes innovation and harms competition. Therefore, this Note proposes that the FIA take three actions to limit the extent of inter-team coordination in F1. First, the FIA should recategorize suspension—both front and rear—as listed components, rather than transferable ones. Second, the FIA should restrict the movement of employees between factory and customer teams by requiring a minimum of twelve month's garden leave. And third, the FIA should bolster the rules vis-à-vis the sharing of wind tunnel facilities to ensure that testing data does not get passed between teams.

A. *The FIA Should Restrict A-B Team Partnerships*

Unrestricted competition between businesses in an open market often leads to greater innovation and product variety.¹⁹⁹ In the United States and Europe, government agencies regulate the conduct of organizations under antitrust laws in order to promote and protect

195. Telephone Interview with James Key, *supra* note 85.

196. *Id.*

197. *Id.*

198. Telephone Interview with James Key, *supra* note 12.

199. *Guide to Antitrust Laws*, FED. TRADE COMM'N, <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws> [<https://perma.cc/Q56S-FZT6>] (last visited Jan. 22, 2021).

aggressive competition in the free market.²⁰⁰ Unlike some athletic organizations in the United States, sports in the European Union are not exempt from competition laws.²⁰¹ Therefore, as the governing body of F1, the FIA has a legal responsibility to regulate the racing series in a manner consistent with antitrust doctrine.

At its heart, F1's A-B team phenomenon is an antitrust issue because the practice has allowed three teams with significant market power to enhance and entrench their influence by "merging" with five of the seven remaining competitors. For this reason, turning to the Federal Trade Commission's *Horizontal Merger Guidelines*²⁰² will help illuminate the harmful effects of this system and highlight why the FIA should amend F1 regulations to restrict tie-ups between customer teams and their suppliers.²⁰³

The *Horizontal Merger Guidelines* are analytical tools used by the Department of Justice to evaluate mergers between competitors.²⁰⁴ Under the Clayton Act, any merger that might "substantially . . . lessen competition, or tend to create a monopoly" violates US federal antitrust law and must be blocked or broken up by the government.²⁰⁵ A merger might lessen competition if it creates, increases, entrenches, or facilitates the use of market power.²⁰⁶ If a merger is likely to encourage a competitor to cut back on innovation efforts, or otherwise harms consumers as a consequence of decreased competitive pressure or incentives, it enhances market power.²⁰⁷ For clarity purposes, this Note

200. *Id.*; *Antitrust: Overview*, EUR. COMM'N, https://ec.europa.eu/competition/antitrust/overview_en.html [<https://perma.cc/6R3U-SAAV>] (last visited Jan. 22, 2021).

201. Major League Baseball's unique antitrust exemption has endured backlash. See Kevin Reichard, *Supreme Court Yet Again Declines to Strike Down MLB Antitrust Exemption*, BALLPARK DIG. (June 12, 2018), <https://ballparkdigest.com/2018/06/12/supreme-court-yet-again-declines-to-strike-down-mlb-antitrust-exemption/> [<https://perma.cc/Y9HL-7EDN>]; Ankur Kapoor & Richard Pike, *Will Formula 1 Outrun Antitrust Complaints?*, LAW360 (Dec. 17, 2015, 11:00 AM), <https://www.law360.com/articles/738665>.

202. U.S. DEP'T OF JUST. & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES 23–24 (2010) [hereinafter HORIZONTAL MERGER GUIDELINES], <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> [<https://perma.cc/NZ35-6G8P>].

203. The European Commission has issued horizontal merger guidelines that set forth criteria akin to the criteria in the Federal Trade Commission's *Horizontal Merger Guidelines*. See *Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-Operation Agreements*, 2011 O.J. (C 11), [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011XC0114\(04\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011XC0114(04)&from=EN) [<https://perma.cc/ZN9E-2USB>]. This Note relies on the *Horizontal Merger Guidelines*, but the analysis would be identical within the European framework.

204. HORIZONTAL MERGER GUIDELINES, *supra* note 202, at 1.

205. See Clayton Act, ch. 323, § 7, 38 Stat. 730, 731–32 (1914) (codified as amended at 15 U.S.C. § 18).

206. HORIZONTAL MERGER GUIDELINES, *supra* note 202, at 2.

207. *Id.*

will refer to the partnerships between factory teams and their respective B-teams as “mergers,” irrespective of team ownership rights.

1. The Merger’s Effect on Market Concentration

Mergers in highly concentrated markets are subject to extreme scrutiny under the *Horizontal Merger Guidelines* because of their increased potential for significant anticompetitive effects.²⁰⁸ When one of the merging parties has significant market share in an already concentrated market, the presumption is that the merger will enhance market power, and is therefore unlawful.²⁰⁹ This presumption can be rebutted by persuasive evidence establishing that the merger is unlikely to harm competition in the relevant market.²¹⁰

Calculating market concentration requires knowing each competitor’s share of the market, which can be done in a multitude of ways. Regardless of the approach, it is reasonable to conclude that each A-B team merger resulted in a highly concentrated market and increased market power. This is because each of the F1 mergers at issue involved at least one party with significant market power.²¹¹ For instance, defining the relevant market as the percentage of team wins over the 2014–2020 seasons (138 Grands Prix), Mercedes has roughly 74 percent of the market; Red Bull has roughly 15 percent; Ferrari has roughly 10 percent; and Williams, Renault, and McLaren (the three teams that remained independent throughout this period) have a combined 0 percent market share.²¹²

2. The Merger’s Impact on Unilateral Effects

The *Horizontal Merger Guidelines* state that if a merger is likely to encourage one of the merging parties to reduce its innovative efforts to a level below that which would occur without the merger, it is a cause for concern.²¹³ Competition spurs innovation, and when a competitor is removed from the market (as it is after a merger), it eliminates incentives to develop new and different products.²¹⁴ The *Horizontal Merger Guidelines* further consider whether the merger would tend to

208. *Id.* at 19.

209. *Id.*

210. *Id.*

211. Mercedes, Ferrari, and Red Bull (the A-teams) each have budgets over \$400 million. The next closest team (Renault) has a budget around \$250 million. *See* George, *supra* note 4.

212. *See, e.g., Race Results (2014–2020), FORMULA 1*, <https://www.formula1.com/en/results.html> (last visited Mar. 15, 2021).

213. HORIZONTAL MERGER GUIDELINES, *supra* note 202, at 23.

214. *Id.*

cause one of the merging firms to stop offering one of its products.²¹⁵ This could also result in anticompetitive effects.²¹⁶ Such a strategy is more likely to transpire when the merging firms offer relatively similar products; the merged firm will save money by consolidating the parties' resources and putting them towards developing one single product, while simultaneously increasing profit margins by removing a competing product from the market.²¹⁷

The unilateral effects of A-B team mergers on innovation and product variety in F1 are substantial. The transferable component dynamic eliminates the need for most teams to invest any resources in important aspects of the car, including the critical power unit.²¹⁸ This has certainly resulted in a decrease of product variety, as evidenced by the sport's copying problem. And one need not look further than the division of market share to get a pulse on the state of competition. During the seven-season data sample, the four B-teams (which raced under a slew of different names) possessed just a combined 1.5 percent of market share.²¹⁹ For this reason, the FIA must further restrict the catalog of transferable components, specifically by designating suspension systems as listed parts. Every constructor should be responsible for designing and manufacturing its own front and rear suspension because these elements are heavy aerodynamic influencers and are therefore performance differentiating.²²⁰ Unlike road cars, which rely on computer-controlled "active suspension," the multi-linked suspension system of F1 cars gives engineers far more control over wheel angles, which effect the lift, dive, and squat of the car.²²¹ Recall that aerodynamics are the touchstone of listed components.²²² If works teams were also able to supply customers with bodywork data, the cars would be almost indistinguishable from each other.²²³ While some

215. *Id.* at 24.

216. *Id.*

217. *Id.*

218. See Jonathan Noble, *F1 Set to Add Brake Ducts to "Listed Parts" in 2020*, MOTORSPORT.COM (Mar. 30, 2019, 9:28 AM), <https://us.motorsport.com/f1/news/brake-ducts-listed-parts-2020/4361534/> [<https://perma.cc/7QHC-KTFM>].

219. *Race Results (2014–2020)*, *supra* note 212.

220. Telephone Interview with James Key, *supra* note 12; Telephone Interview with James Key, *supra* note 85; William Harris, *How Car Suspensions Work*, HOWSTUFFWORKS, <https://auto.howstuffworks.com/car-suspension.htm#pt7> [<https://perma.cc/TQT3-BP3Z>] (Feb. 8, 2021).

221. Harris, *supra* note 220; *The Suspension of a Formula One Car*, MERCEDES-AMG PETRONAS FORMULA ONE TEAM, <https://www.mercedesamgf1.com/en/news/2019/06/the-suspension-of-a-formula-one-car/> [<https://perma.cc/KV6Q-2TBH>] (last visited Mar. 15, 2021).

222. See *supra* Section I.C.

223. Telephone Interview with James Key, *supra* note 12.

racing fans may invite the prospect of purely driver-determined Grands Prix, such an approach is at odds with the innovative spirit of F1.²²⁴ The discrepancies in constructor technology are what define the competition, which is why the FIA should amend the regulations to make suspension a listed part.²²⁵ Performance differentiators must remain within each team's control because independent innovation is critical to the sport's success.²²⁶

3. The Merger's Impact on Coordinated Effects

The *Horizontal Merger Guidelines* also advise against mergers that would enable or encourage coordinated conduct between competitors.²²⁷ Coordinated interaction is considered problematic if it profits the coordinating firms at the expense of the excluded market participants.²²⁸ If the merger would significantly increase market concentration, or if there is evidence that the relevant market is already vulnerable to coordinated conduct, there is a presumption that the merger will result in anticompetitive effects.²²⁹ If a firm with substantial market power has previously colluded with competitors, this is evidence that the market is vulnerable to coordinated conduct, and as a consequence, the merger should be blocked.²³⁰ Furthermore, a market that allows firms to easily detect each other's competitive initiatives is particularly susceptible to collusive behavior.²³¹ This

224. See Keith Collantine & Dieter Rencken, *F1 Shouldn't Limit the Potential for Innovation – Wolff*, RACEFANS (Feb. 26, 2020, 7:14 AM), <https://www.racefans.net/2020/02/26/f1-shouldnt-limit-the-potential-for-innovation-wolff/> [<https://perma.cc/3S49-GWL9>]. Regarding the principle behind F1's maintenance of the WCC and the regulations that govern it, Renault sporting director Alan Permane has stated, "It's about people differentiating, it's about finding that edge on your competitors." *Id.* Additionally, Mercedes's team principal Toto Wolff has remarked, "Innovation will always be at the core of Formula 1." *Id.*

225. Telephone Interview with James Key, *supra* note 85; Guenther Steiner: "F1 Fans Like an Underdog to Fight with the Big Boys," F1: BEYOND THE GRID, at 33:38 (Apr. 2, 2019, 9:30 PM), <https://audioboom.com/posts/7220889-guenther-steiner-f1-fans-like-an-underdog-to-fight-with-the-big-boys> ("In F1, technology is over everything. Science is over everything. In NASCAR racing, it's more about the gut feeling, the experience.").

226. Telephone Interview with James Key, *supra* note 85; Guenther Steiner: "F1 Fans Like an Underdog to Fight with the Big Boys," *supra* note 225; Mrinal Kuniyal, *Where Is Formula 1 Heading with Clone Cars and B Teams?*, ESSENTIALLY SPORTS (Feb. 24, 2020, 6:35 PM), <https://www.essentiallysports.com/where-is-formula-1-heading-with-clone-cars-and-b-teams/> [<https://perma.cc/UV37-9KR8>] ("If big teams use their influence and convert smaller teams into B teams the competitiveness of the sport will go even further below.").

227. HORIZONTAL MERGER GUIDELINES, *supra* note 202, at 24.

228. *Id.*

229. *Id.* at 25.

230. *Id.*

231. *Id.* at 26.

kind of environment is more feasible when the market is highly concentrated.²³²

There is no question that A-B teams have increased the amount of coordinated conduct in F1—that is the primary function of these technical partnerships. But there is also ample evidence to support the conclusion that this increased cooperation has been a detriment to fellow constructors. Williams’s recent decision to relinquish its independence highlights the increased pressure that team mergers impose on independent constructors.²³³ The prevalence of A-B teams has called the future of independent constructors into question.²³⁴ Independent constructors compete head-to-head with B-teams, who operate on significantly smaller budgets but can generate equal levels of performance.²³⁵ Independent constructors also compete head-to-head with A-teams, but in recent history, have had access to only a fraction of their resources.²³⁶ Furthermore, the sharing of testing facilities and personnel could facilitate the ease by which illicit, nontransferable information can be passed between A- and B-teams.²³⁷ This puts teams like McLaren and Renault, who decline to share IP, at an even greater disadvantage.

Consequently, it is necessary to restrict the degree of collaboration between teams that share wind tunnels and personnel. Although the technical regulations mandate that “robust processes” be in place to prevent the transfer of aerodynamic IP, and further state that the movement of employees cannot be used to skirt this requirement, the FIA does not specify what these processes should entail.²³⁸ Therefore, the regulations should be amended to (1) impose a minimum of twelve month’s garden leave on departing employees, (2) restrict which A-team employees can be present during a customer team’s wind tunnel testing, (3) require that customer wind tunnel testing data is kept on a separate server, and (4) ensure that all data is taken off-site when the customer leaves. These preventive measures are necessary in an environment like F1, where the ability to protect

232. *Id.*

233. *See* Barretto, *supra* note 79.

234. Telephone Interview with James Key, *supra* note 85.

235. *Id.*

236. *Id.*; Telephone Interview with James Key, *supra* note 12; *see* Mitchell, *supra* note 76; Mitchell, *supra* note 51; Noble, *supra* note 66; Kuniyal, *supra* note 226.

237. *See* Jonathan Noble, *Renault: Shared Wind Tunnel the “Elephant in the Room,”* MOTORSPORT.COM (Sept. 24, 2020, 3:19 AM), <https://us.motorsport.com/f1/news/renault-shared-windtunnel-elephant-room/4880313/> [<https://perma.cc/FZ7G-U5WD>]; de Geus, *supra* note 67.

238. 2021 F1 Technical Regulations, *supra* note 52, at arts. 22.2.4, 22.2.9.

IP is limited, and the opportunities for employee fraternization are frequent.²³⁹

4. The Merger's Impact on Entry into the Market

A crucial consideration of the *Horizontal Merger Guidelines* is whether a merger may lessen the likelihood of prospective competitors entering the market.²⁴⁰ This is an important part of the assessment because the easy introduction of additional rivals minimizes the anticompetitive effects of horizontal mergers.²⁴¹ In order to overcome the presumption against sanctioning mergers that result in an increase of market power, the entry must be likely, timely, and sufficient.²⁴² A competitor's entry is likely if it would be profitable; it is timely if it can happen quickly enough to make the merging firm's anticompetitive actions unprofitable. Finally, an entry is sufficient if, in addition to being likely and timely, it would adequately counteract the merger's harmful effects on competition in the relevant market.²⁴³

A-teams create substantial barriers to entry in the F1 engine-supply market by tethering smaller constructors to them through shared components, personnel, and test facilities. Manufacturing F1 power units costs hundreds of millions of dollars, and there is no guaranteed return on investment.²⁴⁴ It is therefore unlikely that any firm would undertake such an endeavor without the expectation of wooing several F1 customer-teams. As long as Mercedes and Ferrari continue to control over 50 percent of the constructor market, the timely entry of a third-party engine manufacturer seems very improbable.²⁴⁵ Even current F1 customer teams—which should presumably be keen to take on engine manufacturing given the competitive and financial advantages—are unlikely to expand production efforts.²⁴⁶ B-teams are B-teams because they lack the resources and capabilities required to independently manufacture

239. See Rencken & Collantine, *supra* note 68.

240. HORIZONTAL MERGER GUIDELINES, *supra* note 202, at 27–28.

241. *Id.* at 28.

242. *Id.*

243. *Id.* at 28–29.

244. Dieter Rencken, *Why F1 Isn't Attracting New Engine Manufacturers*, RACEFANS (June 5, 2019, 12:00 PM), <https://www.racefans.net/2019/06/05/why-f1-isnt-attracting-new-engine-manufacturers/> [<https://perma.cc/P6G6-HXCT>]; Telephone Interview with James Key, *supra* note 85.

245. Rencken, *supra* note 244.

246. See Scott Mitchell, *McLaren Didn't Consider Ferrari or Own Engine for 2021*, MOTORSPORT.COM (Oct. 3, 2019, 3:12 AM), <https://us.motorsport.com/f1/news/mclaren-ferrari-own-engine-2021/4551829/> [<https://perma.cc/KFQ7-KDVY>].

transferable components;²⁴⁷ given the option, every constructor would certainly prefer to manufacture its own IP because doing so dramatically increases on-track success.²⁴⁸ McLaren, the last constructor left standing in the void between factory-team and B-team, has also stated that it does not intend to enter the engine market for financial reasons.²⁴⁹ Therefore, as it stands, F1 will continue to be powered by just four engine manufacturers.²⁵⁰ The absence of likely and timely entry into the F1 engine market is unfortunate, not merely because it increases homogeneity in a sport that is lacking healthy competition, but also because, five years from now, regulation changes will mandate that F1 cars run on the most energy-efficient engines in the championship's history.²⁵¹ As a result, global consumers have a real interest in seeing more manufacturers enter the F1 engine market, as increased competition means more investment and variety in green innovation. This benefits the public because it augments the possibilities of incorporating F1 technologies into road cars and service industries.

B. Counterarguments

The chief counterargument to be levied against A-B team restrictions is that, without an extensive level of collaboration, smaller F1 teams would cease to exist. Eliminating constructors would certainly negatively affect the competition, but the concern is an unnecessary one. The FIA, aware of the increasing gap between top-tier teams and the midfield, has already taken precautions to ensure the longevity of customer teams.²⁵² Many of these measures—including the introduction of a spending cap²⁵³ and a “sliding scale” approach to aerodynamic testing²⁵⁴—have the potential to level the playing field over the coming years. Nevertheless, even without incoming regulation changes, the solution presented by this Note does not impose insurmountable financial burdens on B-teams. First, limiting the movement of employees between factory and customer teams will lower,

247. See Noble, *supra* note 66.

248. *Id.*

249. See Mitchell, *supra* note 246.

250. See *supra* text accompanying note 59.

251. See Tobin, *supra* note 50; Rencken & Collantine, *supra* note 48.

252. Barretto, *supra* note 73.

253. *Id.*

254. Lawrence Barretto, *How F1's New Sliding Scale Aero Testing Rules Work – and What Impact They Will Have on Racing*, FORMULA 1 (May 27, 2020), <https://www.formula1.com/en/latest/article.how-f1s-new-sliding-scale-aero-testing-rules-work-and-what-impact-they-will.pn0sG8N4A0cjbNRbdYx8a.html>.

rather than raise, B-team expenses. This is because A-teams began this practice as a means of circumventing upcoming budget limitations.²⁵⁵ This self-serving practice has even caused some F1 commentators to jokingly describe it as a “slave team” dynamic.²⁵⁶

Next, requiring customer teams to independently develop suspension components is unlikely to impose expenses that are overly burdensome. Most of the production cost would be offset by the funds not paid to factory-teams in exchange for that same part, which has its own competitive advantages because it limits the financial resources of A-teams.²⁵⁷ Furthermore, the customer team’s potential for increased on-track success offers an additional competitive benefit.²⁵⁸ Lap-time proficiencies can be found by exercising greater control over all aspects of a car’s aerodynamic effect.²⁵⁹

The solution’s third element simply requests that the FIA specify which protocols should be in place to ensure that the current regulations—which forbid the transfer of aerodynamic IP—are followed. Therefore, this measure should not impose any burden on constructors greater than what it already required of them.

IV. CONCLUSION

The 2020 season brought to light both the magnitude and scope of car-copying capabilities in F1, thanks to Racing Point’s “Pink Mercedes.” In an attempt to prevent future clone cars, the FIA has added an “anti-reverse engineering” amendment to the 2021 regulations.²⁶⁰ This regulation change fails to tackle the root of the copycat problem, though. The primary reason that copying is so prevalent in F1 is because of FIA regulations that allow constructors to license “transferable” components of their cars to competitors.²⁶¹ These technical alliances, or A-B team relationships, result in extensive collaboration between rivals and often include sharing personnel and aerodynamic testing facilities. A-B team partnerships are problematic for a number of reasons. First, they harm competition by widening the gap between factory-teams and B-teams.²⁶² Factory teams have the upper hand because they are designing the IP. Second, the degree of

255. See Noble, *supra* note 66.

256. *Id.*

257. Telephone Interview with James Key, *supra* note 85.

258. *Id.*

259. *Id.*; Telephone Interview with James Key, *supra* note 12.

260. See Tobin, *supra* note 113.

261. See *supra* Sections II.B, III.A.2.

262. See *supra* Section III.A.2.

collaboration between A-B teams facilitates the illicit sharing of nontransferable, “listed” components.²⁶³ This enables the ease and accuracy of copying listed components, which in turn disincentivizes investment in independent invention. Because the FIA regulation change does not restrict the degree of inter-team collaboration in F1, it will likely fall short of resolving the sport’s copying problem.²⁶⁴ A better approach is found by analyzing the issue through an antitrust doctrine lens.²⁶⁵ Factory-teams are entrenching their significant market power by strengthening ties with smaller, less influential constructors.²⁶⁶ Breaking up these “merged” firms will reintroduce competitive forces into F1 and revitalize its innovative spirit.

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263. See *supra* Section III.A.3.

264. See *supra* Section II.B.

265. See *supra* Section III.A.

266. See *supra* Section III.A.

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