THE GOOGLE MADE ME DO IT: THE COMPLEXITY OF CRIMINAL LIABILITY IN THE AGE OF AUTONOMOUS VEHICLES

Clint W. Westbrook[*]

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ABSTRACT

Technology is rapidly developing in nearly every field, and the automotive industry is no exception. Vehicle manufacturers have begun implementing impressive new automation in their high-end models, including adaptive cruise control, accident avoidance, and lane-departure warnings. But automotive technologists dream of going further—and they have. Multiple vehicle manufacturers are now testing "self-driving cars." These fully autonomous vehicles operate at the push of a button, taking their passengers wherever they want to go. And the human "driver," once responsible for every part of the vehicle's operation, is now just along for the ride. In fact, some of the most advanced prototypes have no steering wheel at all.

But in this exciting age of technology, the law is struggling to keep up. For example, it was just recently, in December of 2016, that the state of Michigan—the car capital of the world—passed legislation allowing autonomous vehicle to operate on public roads. And even with those newly minted statutes, there are huge gaps in how the law will treat a vehicle without a traditional driver. Legal publications have been examining many of these issues, but one area remains particularly neglected: criminal liability. This Article will examine the uncertainty surrounding criminal liability for both the manufactures and consumers of these complex machines. Ultimately, it proposes a new system called "products culpability." This system offers a cogent framework that provides predictability if and when the self-driving car breaks the law. Who gets the ticket? Products culpability gives an answer.

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* Associate, Warner, Norcross & Judd, LLP. J.D., Michigan State University College of Law (2016).

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INTRODUCTION

If there is one thing that consistently and reliably captures the awe and attention of the American public, it is the promise of new technology.[1] This fascination is evident in news ranging from futuristic military technology used on the battlefield[2] to smart thermostats that control the temperature in one's home.[3] Now, to the forefront of the technology theater comes a technology that has been long-dreamt about: the autonomous vehicle (AV), or, more colloquially, the self-driving car.[4]

Although the most recent version of the AV may be new,[5] the idea first "piqued the collective American and world imagination" at the *Futurama* exhibit at the 1939 World's Fair.[6] This technology promises to eliminate the driver, which is the most dangerous part of the car,[7] and allows passengers to ride together in the family car without bothering to control steering, acceleration, or braking.[8] While the prospect of (legally) reading the newspaper or an urgent

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1. *See* Greg Scoblete, *Why Americans Love Their Gadgets*, REAL CLEAR TECH. (Jan. 24, 2012), http://www.realcleartechnology.com/articles/2012/01/24/why_americans_love_their_gadgets_81.html [https://perma.cc/7JG3-36LL].

2. *See* POPULAR SCIENCE: MILITARY TECHNOLOGY, http://www.popsci.com/military [https://perma.cc/4RWF-ZGJA] (last visited Dec. 27, 2016) (a portion of Popular Science dedicated to new military technology).

3. *See Wi-Fi Smart Thermostat*, HONEYWELL, http://yourhome.honeywell.com/en/products/thermostat/wi-fi-smart-thermostat-rth9580 [https://perma.cc/2S7Z-BS6C] (last visited Dec. 27, 2016).

4. For the purposes of this Article, the term "autonomous vehicle" (AV) will be most appropriate, specifically meaning that the car drives itself through technology. Though certain elements of technology examined below may fall short of making one's car fully "self-driving," each new technological element added to the vehicle increases the level of automation. *See infra* note 13 and accompanying text; *infra* Section II.A.

5. Google debuted its—actually—self-driving car in 2014. It now operates the program under a project called *Waymo*. *See Journey*, WAYMO, https://waymo.com/journey (last visited Jan. 15, 2017) [https://perma.cc/GY7H-X27W].

6. JAMES M. ANDERSON ET AL., RAND CORP., AUTONOMOUS VEHICLE TECHNOLOGY: A GUIDE FOR POLICYMAKERS 1 (2016), http://www.rand.org/content/dam/rand/pubs/research_reports/RR400/RR443-2/RAND_RR443-2.pdf [https://perma.cc/ QFG5-3HU9].

7. *See* Kevin Funkhouser, *Paving The Road Ahead: Autonomous Vehicles, Products Liability, and the Need for a New Approach*, 2013 UTAH L. REV. 437, 438 (2013).

8. *See* Frank Douma & Sarah Aue Palodichuk, *Criminal Liability Issues Created by Autonomous Vehicles*, 52 SANTA CLARA L. REV. 1157, 1160 (2012).

email certainly entices imaginative minds,[9] AV technology poses a litany of questions.[10] Many papers have treated the difficult products and tort liability issues stemming from the increase in automated technology.[11] One commentator even advocates treating these vehicles no differently than a dog—as simple chattel.[12] Few scholars, however, have treated the issue of criminal liability in a new world of AVs and self-driving cars.[13] For example: If a vehicle has no driver but simply an "operator" (who is more a passenger than a driver), then who receives the ticket for a moving violation, such as passing a stop sign without stopping? Or, even more importantly, who—or what—is to be held responsible for vehicular homicide? Setting aside for a moment the questions of products liability, tort liability, and the deep ethical questions sometimes associated with vehicle technology,[14] this Article endeavors to develop a framework for assigning criminal liability to parties involved in a violation of a state vehicle code. Specifically, it proposes that potential illegal acts should be treated distinctively through a new concept called *products culpability* and should be divided into four categories: (1) simple

9. Technology advocates envision shared AV systems that reduce traffic, make travel safer, and enable effective ride sharing. *See* Ryan C. C. Chin, *Driverless Cars—The Future of Transport in Cities?*, THE GUARDIAN (Feb. 24, 2014, 7:41 AM), http://www.theguardian.com/sustainable-business/driverless-vehicles-future-car-sharing [https://perma.cc/JWC3-87KF].

10. *See* Andrew Del-Colle, *The 12 Most Important Questions About Self-Driving Cars*, POPULAR MECHANICS (Oct. 8, 2013), http://www.popularmechanics.com/cars/news/industry/the-12-most-important-questions-about-self-driving-cars-16016418 [https://perma.cc/JWC3-87KF].

11. *See generally* Funkhouser, *supra* note 7; Jeffrey K. Gurney, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles*, 2013 U. ILL. J.L. TECH. & POL'Y 247 (2013).

12. *See generally* Sophia H. Duffy & Jamie Patrick Hopkins, *Sit, Stay, Drive: The Future of Autonomous Car Liability*, 16 SMU SCI. & TECH. L. REV. 453, 472 (2013).

13. As explained *supra* note 4 and *infra* Section II.A, there is a technical difference between AVs and self-driving cars. AVs range from cars with automatic braking to fully autonomous vehicles. Self-driving cars, however, are vehicles that operate as a normal automobile might, but the usual "driver" is simply a passenger who essentially pushes "go" after entering a destination. The term *AV* provides the broadest category and, for this analysis, will mean a self-driving car. *See* ANDERSON ET AL., *supra* note 6, at 2-3.

14. That is, some might raise questions about the appropriate action for a driver to take when faced with difficult situations, such as a "lesser-of-two-evils" decision. If one is unable to brake in sufficient time, does one crash into the vehicle ahead, putting passengers at risk? Or does one pull onto the sidewalk, putting pedestrians at risk? That ethical question will not be addressed as part of this Article.

civil infractions, the liability for which should remain with the human operator; (2) strict liability offenses, the liability for which should remain with the human operator subject to products liability indemnification actions; (3) intent-based crimes, the liability for which must depend on the existence of the requisite *mens rea*; and (4) negligent homicide crimes, in which the manufacturer may be liable depending on the facts of each case.

Part I of this Article discusses the current state of common vehicle codes, using the Michigan code as an example of state vehicle law.[15] Part II discusses the history and current state of AV technology, with a focus on current AV laws in several states. Part III discusses the corporate form and principles of agency. Part IV analyzes the interplay between AVs and the current vehicle code, ultimately proposing that criminal liability for AV operators and manufacturers should vary depending on the nature of the infraction.

Before beginning the analysis, it should be noted that AV technology is a *rapidly* changing field, and state law is scrambling to keep up. In fact, as this Article has gone through the editing process, it has been amended multiple times in an attempt to reflect recent changes in the law. That said, new technology could become reality, and new bills could become laws before these words can be printed on a page. But that is the inherent risk of writing about law and technology, so this Article also attempts to answer a question that—at least at the time of writing—remains unanswered: Who goes to jail when an AV kills someone?

15. *See infra* Part I. Michigan is an appropriate example state for several reasons. First, it is often regarded (at least in Michigan) as the birthplace of the modern automobile. Detroit is the "Motor City," and it has a long history of automobile production and innovation. *Michigan's Automotive Industry Is Alive and Well*, DETROIT REGIONAL CHAMBER, http://www.detroitchamber.com/econdev/chamber-initiatives/michauto-universal-name/the-auto-industry-in-michigan/ [https://perma.cc/KF96-8Z8X] (last visited Dec. 27, 2016). Secondly, the Michigan Vehicle Code is representative of other states' vehicle codes, particularly in the Midwest. *See generally*; IND. CODE §§ 9-13-0.1-1 to 9-32-17-9 (2016); IOWA CODE §§ 321.1 to 321.371 (2016); MICH. COMP. LAWS §§ 257.1 to 257.923 (2016); WIS. STAT. §§ 346.01 to 346.95 (2016). Most drivers have little trouble when driving in a new state, presumably due in part to the consistency of the state vehicle codes. This Article does not include an exhaustive fifty state survey of state vehicle codes.

I. CURRENT STATE VEHICLE CODES

With the advent of the motor vehicle, states were tasked with the implementation of comprehensive vehicle codes.[16] To regulate and manage the use of motor vehicles, most states enacted new, specific vehicle codes that govern particular elements of driver responsibility.[17] In the Michigan Vehicle Code (MVC) for example, the law governs everything from moving violations,[18] to failing to stop for a police vehicle,[19] to using horse-drawn vehicles.[20] Essentially, the "rules of the road" come from the MVC, and it is this code that governed AVs as well.[21]

Then, in December of 2016, the MVC got an update to usher in the age of AV technology. Through Senate Bill (S.B.) 995, Michigan passed one of the most permissive AV laws to date.[22] In no uncertain terms, it says, "An automated motor vehicle *may be operated on a street* or highway in this state."[23] Prior to S.B. 995, the MVC held the exact opposite: "[A] person shall not operate an automated motor vehicle upon a highway or street in automatic mode."[24] Importantly, as addressed *infra* Part II, this law does not address criminal liability. So, for all of the questions the new provisions answered about AV development, it relies on the already-enacted provisions of the MVC to define and punish criminal activity that occurs behind the wheel—or, in the case of an AV, behind the steering-wheel-less front compartment.[25] Currently, operators of motor vehicles may be held to

16. The first of these codes was instituted in New York in 1903. *See* Carl Watner, *A Short History of Highway and Vehicle Regulations*, 92 THE VOLUNTARYIST 8, 6-7 (1998), http://voluntaryist.com/backissues/092.pdf [https://perma.cc/7UDW-LGRM].

17. *See, e.g.*, CAL. VEH. CODE §§ 1 to 42277 (West 1959); MICH. COMP. LAWS §§ 257.1 to 257.923 (1949); NEV. REV. STAT. § 484A.005 to 484A.770 (2011).

18. MICH. COMP. LAWS § 257.601b (2011).

19. *Id.* § 257.602a.

20. *Id.* § 257.604.

21. *Id.* § 257.665.

22. Kirsten Korosec, *Michigan Just Passed the Most Permissive Self-Driving Car Laws in the Country*, FORTUNE (Dec. 9, 2016, 7:32 PM), http://fortune.com/2016/12/09/michigan-self-driving-cars.

23. S.B. 995 § 665(4), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(4) (West 2016) (emphasis added)).

24. MICH. COMP. LAWS § 257.663 (repealed 2016).

25. *See* Rich McCormick, *Take a Look Inside Google's Cute Little Self-Driving Car*, THE VERGE (Jul. 13, 2015, 8:15 PM), http://www.theverge.com/2015/7/13/8955621/google-self-driving-car-pictures-interior.

three different levels of liability under the MVC, each with increasingly severe penalties.[26]

A. Civil Infractions

Under the MVC, the lowest level of infraction for which a fine may be issued is called a civil infraction.[27] According to the MVC, "'[c]ivil infraction' means an act or omission prohibited by law which is not a crime . . . and for which civil sanctions may be ordered."[28] These "civil infractions," the section says, do not amount to "crimes," which means that the state may levy only civil sanctions;[29] that is, the violation's severity falls below a misdemeanor and does not require that the accused be apprised of the same rights as under a criminal conviction.[30] Examples of such violations include: disobeying "the instructions of a traffic control device";[31] failing to stop at a flashing red signal;[32] and failing to move a vehicle from the scene of an accident.[33]

Importantly, these offenses do not contain any element of *mens rea*.[34] That is, no special mental state is required to find that the driver is guilty of failing to stop at a flashing red signal.[35] Whether the driver was aware of the light or not, he or she may be found guilty of a civil violation.[36] Though the MVC includes many exceptions and additional provisions, the state may generally punish civil infractions as follows:

> If a person is determined under sections 741 to 750 to be responsible or responsible "with explanation" for a civil infraction under [the MVC] or a local ordinance substantially corresponding to a provision of [the MVC],

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26. *Id.* § 257.601b(1)-(3) (indicating civil infractions, misdemeanors, and felonies).

27. *Id.* § 257.6a.

28. *Id.*

29. *Id.*

30. These offenses do not meet the elements of "crime" as defined by MICH. COMP. LAWS § 750.5 (1931); *Civil Infraction*, redirected to *Infraction*, BLACK'S LAW DICTIONARY (10th ed. 2014).

31. MICH. COMP. LAWS § 257.611(1) (2016).

32. *See id.* § 257.614(1)(a).

33. *See id.* § 257.618a.

34. *See id.* § 257.614(2) (mandating that "[a] person who violates this section is responsible for a civil infraction"). This indicates that no intent, or *mens rea*, is required to find the actor guilty of the violation.

35. *See id.* § 257.614(1)(a); *infra* notes 46-49 and accompanying text.

36. For a detailed discussion of the concept of *mens rea*, see *infra* Section I.C.

> the judge or district court magistrate may order the person to pay a civil fine of not more than $100.00 and costs as provided in subsection (4).[37]

With a maximum penalty of $100.00 plus actual costs, the MVC treats civil infractions much less severely than strict-liability or intent-based crimes.[38]

B. Strict-Liability Crimes

Moving beyond simple civil crimes and into criminal violations, the MVC punishes strict-liability crimes as a second category of violations.[39] To be found guilty of a crime under the MVC,[40] or for any other crime, the operator must satisfy the statutory elements of the criminal offense.[41] Most basically, the actor must meet the required *actus reus* and *mens rea* of the offense. *Actus reus* consists of an act that has a causal link to the created harm, "with *actus* expressing the voluntary physical movement . . . and *reus* expressing the fact that this conduct results in a certain proscribed harm."[42] That is, to be found criminally liable, the alleged perpetrator must *act*, and the act must cause the avoided *harm*.[43] The *actus reus* typically provides the easiest element to satisfy because truly

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37. MICH. COMP. LAWS § 257.907 (2015). Subsection (4) provides, in part:

> If a civil fine is ordered under subsection (2) or (3), the judge or district court magistrate shall summarily tax and determine the costs of the action, which are not limited to the costs taxable in ordinary civil actions, and may include all expenses, direct and indirect, to which the plaintiff has been put in connection with the civil infraction, up to the entry of judgment.

Id. § 257.907(4).

38. *See infra* Sections I.B-C.

39. MICH. COMP. LAWS § 750.8 (2016).

40. Some statutes contain *mens rea* elements, while others do not. *Compare id.* § 257.625(2) (mandating: "The owner of a vehicle or a person in charge or in control of a vehicle shall not authorize or *knowingly* permit the vehicle to be operated upon a highway") (emphasis added), *with id.* § 257.625(1) (requiring: "A person, whether licensed or not, shall not operate a vehicle upon a highway or other place open to the general public or generally accessible to motor vehicles . . . if the person is operating while intoxicated"). Note the absence of any *mens rea* requirement in the second statute. *See infra* note 46.

41. *See* JOSHUA DRESSLER, CASES AND MATERIALS ON CRIMINAL LAW 127 (5th ed. 2009).

42. Albin Eser, *The Principle of "Harm" in the Concept of Crime: A Comparative Analysis of the Criminally Protected Legal Interests*, 4 DUQ. L. REV. 345, 386 (1966).

43. *See id.*

involuntary acts are rare.[44] For strict liability crimes, the court need find only that the act by the perpetrator was voluntary because, arguably, there is no *mens rea* required.[45]

Some courts, including Michigan's Court of Appeals, hold that strict-liability offenses are generally disfavored, but each statute must be interpreted to find the requisite level of *mens rea* intended.[46] That is, a court may typically presume that the statute intends a level of *mens rea*, but the court must individually analyze legislative intent to determine whether the legislature in fact intended a strict-liability crime.[47] For purposes of the MVC, crimes that lack the *mens rea* element are likely strict-liability crimes, and they are punishable as either felonies or misdemeanors.[48]

According to the Michigan Penal Code, a misdemeanor is "any act or omission, not a felony, [that] is punishable according to law, by a fine, penalty or forfeiture, and imprisonment," or when the act is not a felony but may be punished similarly according to the court's discretion.[49] Examples of strict-liability misdemeanors under the MVC include: committing a moving violation[50] in a work or school

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44. For example, a third-party would have to physically move the actor to assault another person to constitute an involuntary act. *See* Melissa Hamilton, *Reinvigorating* Actus Reus*: The Case for Involuntary Actions by Veterans with Post-Traumatic Stress Disorder*, 16 BERKELEY J. CRIM. L. 340, 341, 345-46 (2011).

45. *See* MODEL PENAL CODE § 2.01 (AM. LAW INST. 2015); *Liability*, BLACK'S LAW DICTIONARY (10th ed. 2014).

46. People v. Nasir, 662 N.W.2d 29, 31 (Mich. Ct. App. 2003). However, as the Michigan Court of Appeals said in *Nasir*, "[a]s with all questions of statutory interpretation, when determining whether a statute imposes strict liability, [the court's] primary goal is to determine and effectuate the Legislature's intent." *Id.* As a general principle, a *mens rea* element required in other sections of the same law may indicate a strict liability offense where the *mens rea* element is conspicuously missing. *See* DRESSLER, *supra* note 41, at 176-77 n.1.

47. *See Nasir*, 662 N.W.2d at 31.

48. In examining Michigan's Vehicle Code, it is difficult to determine whether the court would find that every statute lacking a *mens rea* constitutes a strict-liability crime. *See supra* note 46. However, the requisite *mens rea* is often defined in other sections of the MVC. *See, e.g.*, MICH. COMP. LAWS § 257.602a (2016). As noted above, *supra* note 46, this likely indicates strict liability for moving violations and simple civil violations. *See* DRESSLER, *supra* note 41, at 176. For purposes of this Article, it is assumed that courts would interpret statutes lacking the *mens rea* element to intend strict liability.

49. MICH. COMP. LAWS § 750.8 (2016).

50. Moving violation is defined as: "[A]n act or omission prohibited under this act or a local ordinance substantially corresponding to this act that occurs while a person is operating a motor vehicle, and for which the person is subject to a fine." *Id.* § 257.601b(5)(b).

zone that "causes *injury* to another person" in that zone;[51] operating a motor vehicle while over the legal limit of blood alcohol content;[52] and failing to take adequate precautions when approaching a disabled pedestrian in a crosswalk.[53]

The Michigan Penal Code then goes on to define felony, saying, "[t]he term 'felony' when used in this act, shall be construed to mean an offense for which the offender, on conviction may be punished by death, or by imprisonment in state prison."[54] Examples of such strict-liability felonies are: committing a moving violation in a work or school zone that "as a result causes *death* to another person" in that zone;[55] using a device that jams police radar;[56] and failing to properly avoid a stopped emergency vehicle.[57] These crimes serve as important examples of the problem surrounding the technology; it remains unclear whether AVs can actually commit such crimes.[58] A more complicated question arises, though: can AVs, as machines, have intent?[59]

C. Intent-Based Crimes

The last, and most complicated, set of crimes for which the operator of a vehicle may be convicted is the corpus of intent-based crimes.[60] The statute upon which such an infraction is based indicates the requirement of a certain *mens rea*, or mental state.[61] The *mens rea* element is typically divided into four possible levels: purposely, knowingly, recklessly, and negligently.[62] Purpose requires the most forethought and intentional action, knowledge requires practical certainty of a result from known circumstances, recklessness

51. *Id.* § 257.601b(2) (emphasis added).
52. *Id.* § 257.625(1)(b).
53. *See id.* § 257.612(4).
54. *Id.* § 750.7.
55. *Id.* § 257.601b(3) (emphasis added).
56. *Id.* § 257.616a(1)(b).
57. *See id.* § 257.653a.
58. *See infra* Part IV.
59. *See generally* A.M. Turing, *Computing Machinery and Intelligence*, 59 MIND 433, 433 (1950), http://phil415.pbworks.com/f/TuringComputing.pdf [https://perma.cc/5NMR-BDDE] (discussing "the answer to the question, 'Can machines think?'").
60. *See, e.g.*, MICH. COMP. LAWS § 257.625(2) (2014) (prohibiting the owner of a vehicle from *knowingly* allowing his vehicle to be operated by an intoxicated driver).
61. *Id.*
62. MODEL PENAL CODE § 2.02(2) (AM. LAW INST. 2015).

involves acting in disregard of a known risk, and negligence requires only a gross deviation from the conduct of a reasonable person.[63] By indicating a *mens rea* in certain provisions of the MVC but not in others, the legislature may have indicated their intent that violations lacking a *mens rea* requirement are meant to be strict liability offenses.[64]

Intent-based infractions in the MVC include: "willfully" failing to obey a signal given by a police officer in the course of his duties;[65] "knowingly" operating the vehicle on a highway if the operator is over the legal limit of blood alcohol content;[66] and "knowingly permit to be driven or moved on a highway a vehicle or combination of vehicles that is in such an unsafe condition as to endanger a person."[67] While the statutes are relatively clear for such crimes, omission on the part of the operator will add a significant complexity to the issue of intent-based crimes.[68] As the Model Penal Code mandates, actors may be found liable for an omission where either (1) the omission is made criminal by statute, or (2) the actor fails to act where a legal duty has been imposed.[69]

These specific-intent crimes form the crux of the complexity surrounding AV criminal liability. Although S.B. 995 does not define criminal liability, it does define who the "driver or operator" is: the "automated driving system allowing for operation without a human operator shall be considered the driver or operator of a vehicle for purposes of determining conformance to any applicable traffic or motor vehicle laws," it says.[70] So the *system itself* is the operator. S.B. 995 goes on to define "automated driving system" as "hardware and software that are collectively capable of performing all aspects of the dynamic driving task for a vehicle on a part-time or full-time basis without any supervision by a human operator."[71] Note

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63. *See id.* § 2.02(2)(a)-(d).

64. *See* text accompanying *supra* notes 46-49; People v. Nasir, 662 N.W.2d 29, 32 (Mich. Ct. App. 2003) (noting that "[e]xamples of such strict-liability offenses include narcotics laws, traffic laws, adulterated food or drug laws, criminal nuisances, and liquor control laws").

65. MICH. COMP. LAWS § 257.602a(1) (2016).

66. *Id.* § 257.625(2)(a)-(b).

67. *Id.* § 257.683(1).

68. *See* MODEL PENAL CODE. § 2.01(3) (AM. LAW INST. 2015).

69. *Id.*

70. S.B. 995 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

71. *Id.* § 2b(1) (codified at MICH. COMP. LAWS ANN. § 257.2b(1) (West 2016)).

that the system must be capable of "performing all aspects" of the driving task *without* the human operator.

Because state laws will continue to evolve differently to accommodate the new world of AVs, each state legislature and state supreme court must analyze their own intent-based and strict-liability offenses to decide how amicable they intend to be toward the "operators" of AVs—whether those operators are people or machines.[72] The specifics of each state code will surely vary, even given the fact that state vehicle codes share many similarities when addressing criminal liability.[73] In deciding the liability issues surrounding AVs, then, the courts and legislatures must resolve whether AVs have an ability to "knowingly" do something, whether the AV or the human operator will be liable for civil and criminal infractions, and, most importantly, how the law will evolve to reflect these policy decisions.[74]

D. Putting It All Together: Criminal Homicide Under the Model Penal Code

That short survey of relevant traffic laws brings us to the most complex issue: liability when an AV kills a human being. Homicide, like most criminal behavior, is defined and punished differently by each state.[75] This renders any sweeping generalizations about "the criminal law" in the United States largely inaccurate.[76] Referenced above,[77] the American Law Institute's Model Penal Code (MPC) provides some standards that have been widely accepted across the 50 states.[78] Accordingly, in examining "the criminal law," this Article will discuss homicide as described in the MPC, referring to Michigan as the example state where appropriate.[79]

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72. For a good analysis of strict liability offenses, see Richard A. Wasserstrom, *Strict Liability in the Criminal Law*, 12 STAN. L. REV. 731, 732-34 (1960).

73. *See supra* note 15 and accompanying text.

74. *See infra* Subsection IV.C.3.

75. Paul H. Robinson & Markus Dirk Dubber, *An Introduction to the Model Penal Code* 1, UNIVERSITY OF PENNSYLVANIA LAW SCHOOL (Mar. 12, 199), https://www.law.upenn.edu/fac/phrobins/intromodpencode.pdf [https://perma.cc/EAW9-XY5Y].

76. *Id.*

77. *See supra* note 62 and accompanying text.

78. Robinson, *supra* note 75, at 1-2.

79. *See supra* note 15 (explaining why Michigan is an appropriate example state).

The MPC defines three kinds of homicide, each requiring a different level of intent.[80] Generally speaking, killing a person is "criminal homicide," and one is guilty of that crime "if he purposely, knowingly, recklessly or negligently causes the death of another human being."[81] Homicide rises to the level of murder when "committed purposely or knowingly; or [when] . . . committed recklessly under circumstances manifesting extreme indifference to the value of human life."[82] Such a murder is a first-degree felony, punishable by death in some jurisdictions.[83]

When the perpetrator does not maintain intent amounting to purposely or knowingly, the killing is either manslaughter or negligent homicide.[84] Manslaughter is homicide committed recklessly, and it is punishable as a second-degree felony.[85] Negligent homicide, however, requires only a showing of negligence, and it constitutes a felony in the third degree.[86] Though these standards seem relatively straightforward, the terms used therein—*purposely*, *knowingly*, *recklessly*, and *negligently*—bring significant complication.

As discussed briefly in Part I, the MPC defines each of these levels of culpability, beginning with purposely. A person acts purposely when "it is his conscious object to engage in conduct of that nature or to cause such a result" and he is aware of the "attendant circumstances" that satisfy the other elements of the offense.[87] An attendant circumstance is simply an element that forms the basis of an offense.[88] For example, to be guilty of homicide, one must actually kill a "human being."[89] The victim's status as a "human being" is the attendant circumstance that forms the basis of the crime in the first place.[90]

Second, someone acts knowingly when he knows that the attendant circumstance exists, and "he is aware that it is practically certain that his conduct will cause such a result."[91] The difference

80. MODEL PENAL CODE § 210.1 (AM. LAW INST. 2015).
81. *Id.*
82. *Id.* at § 210.2(1).
83. *Id.* at § 210.2(2).
84. *Id.* at § 210.3-4.
85. *Id.* at § 210.3.
86. *Id.* at § 210.4.
87. *Id.* at § 2.02(2)(a).
88. *See id.* at § 1.13(9).
89. *See id.* at § 210.1.
90. *See id.* at § 1.13(9).
91. *Id.* at § 2.02(2)(b).

between *purposely* and *knowingly* is subtle. *Purposely* requires that the actor intend the specific result, and *knowingly* requires that the actor be aware that his conduct will result in particular harm.[92] For example, someone might put a bomb on an airplane, intending to kill two of the passengers on that plane.[93] But the bomber also knows that the other 98 passengers will be killed in the explosion.[94] So the bomber acts *purposely* toward the two people by intending that those two be killed, but acts only *knowingly* toward the other 98 people, knowing that the explosion will kill them, too.[95]

On the other hand, acting recklessly requires only that the perpetrator "consciously disregards a substantial and unjustifiable risk . . . [that] involves a gross deviation from the standard of conduct that a law-abiding person would observe in the actor's situation."[96] For example, walking into a classroom and shooting a gun over the heads of the students, purportedly trying to hit the clock in the back of the room, would be reckless if the shooter knew there was a substantial risk of harm.[97] This would be a gross deviation from a law-abiding person's standard of conduct.

Finally, the MPC indicates that a person acts negligently "when he should be aware of a substantial and unjustifiable risk that the material element exists or will result from his conduct" and his failure to perceive the risk grossly deviates from the standard of a reasonable person.[98] This differs from recklessness in that the negligent person need not "consciously disregard" the risk.[99] Even if the actor does not know the risk of his action, he may be found liable for negligent homicide by grossly deviating from the standard of a reasonable person.[100]

Because this Article will continue to discuss the Michigan Motor Vehicle Code (MVC), it is necessary to return to Michigan law for a moment. Michigan courts recognize negligent homicide as

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92. *Id.* at § 2.02(2)(a)-(b).

93. This example comes from *Model Penal Code Mens Rea*, NAT'L PARALEGAL COLL. (2017), https://nationalparalegal.edu/public_documents/courseware_asp_files/criminalLaw/basicElements/ModelPenalCodeMensRea.asp [https://perma.cc/ 64XP-7MP7].

94. *Id.*

95. *Id.*

96. MODEL PENAL CODE § 2.02(c).

97. This example comes from a Criminal Law class by Barbara O'Brien, Associate Professor of Law, at the Michigan State University College of Law.

98. MODEL PENAL CODE § 2.02(d).

99. *Id.* at § 2.02(c).

100. *Id.* at § 2.02(d).

manslaughter. In *People v. Richardson*, the Michigan Supreme Court defined involuntary manslaughter as "the killing of another without malice and unintentionally, but in doing some unlawful act not amounting to a felony nor naturally tending to cause death or great bodily harm, or *in negligently doing some act lawful in itself, or by the negligent omission to perform a legal duty*."[101] A person found guilty of manslaughter may be sentenced to fifteen years in prison, fined up to $7,500, or both.[102] Moreover, the MVC imposes a $1,000 "driver responsibility" fee in addition to any other criminal charges levied for manslaughter or negligent homicide.[103]

But even with such specific guidance, applying the law to AVs is not clear. So in light of those standards and other state-specific laws, legislatures need to enact policies and legislation to govern exactly what happens if and when an AV causes a fatal accident. After discussing more of the history and jurisprudence surrounding automated technology, this Article provides a solution.[104]

II. CURRENT AVS AND AV LAWS

AV technology is continually developing,[105] with estimates of consumer-ready vehicles ranging from next year to five years from now.[106] Automation in cars can be something as simple as cruise control, as advanced as full automation, or something in-between—like adaptive cruise control.[107] The most complicated legal issues

101. People v. Richardson, 293 N.W.2d 332, 336 (Mich. 1980) (quoting People v. Townes, 218 N.W.2d 136, 141 (Mich. 1974)), *modified on other grounds*, People v. Beach, 418 N.W.2d 861, 870 n.9 (Mich. 1988).

102. MICH. COMP. LAWS ANN. § 750.321.

103. MICH. COMP. LAWS ANN. § 257.732a(2)(a)(i).

104. *See infra* Part IV.

105. For a good history of AV technology, see Rachael Roseman, Note, *When Autonomous Vehicles Take Over the Road: Rethinking the Expansion of the Fourth Amendment in a Technology-Driven World*, 20 RICH. J.L. & TECH. 1, 4-11 (2014).

106. *See* Katie Nelson, *Self-Driving Cars Will Hit UK Roads in 2015*, MASHABLE (July 30, 2014), http://mashable.com/2014/07/30/self-driving-cars-uk [https://perma.cc/GNE7-ZCM8]. *But see* Brian Leon, *Google's Self-Driving Car May Be Further Away Than You Think*, N.Y. DAILY NEWS (Sept. 2, 2014, 11:37 AM), http://www.nydailynews.com/autos/google-self-driving-car-article-1.1924691 [https://perma.cc/E2FE-M6A8].

107. *See* ANDERSON ET AL., *supra* note 6, at 2-3; Karim Nice, *How Cruise Control Systems Work*, HOWSTUFFWORKS, http://auto.howstuffworks.com/cruise-control4.htm [https://perma.cc/XL77-DGH9] (last visited Dec. 27, 2016) (noting

involve fully automated technology.[108] By promising that the AV technology will take control of the vehicle, manufacturers also impliedly promise that the AV will follow relevant traffic laws.[109]

A. AVs: History and Technology

Though vehicles may now be self-driving,[110] their history began with simpler roots. Beginning with the 1939 World's Fair,[111] the promise of AVs grew to an international competition in 2004: the DARPA Grand Challenge.[112] This challenge was meant to increase the safety of soldiers in combat.[113] One year later, five AVs completed a 150-mile course using only self-guiding technologies for the first time.[114] Now, ten years later, multiple big manufacturers are producing prototypes and fully functioning AVs to compete in a global market.[115]

Modern, fully self-driving vehicles require a complex system of advanced technology to effectively operate.[116] To maintain their position on the road and avoid crashes, AVs use GPS systems, map data, sensors, and cameras.[117] Most significantly, modern AVs use a technology called Light Detection and Ranging, or LiDAR, which perceives and draws a virtual map of the vehicle's surroundings.[118] This LiDAR unit proves valuable, as it identifies pedestrians, stop

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that adaptive cruise control recognizes vehicles around the principal vehicle and slows or accelerates to accommodate those other vehicles).

108. *See* ANDERSON ET AL., *supra* note 6, at 3 (describing Level 4 AV technology).

109. *See* Heather Kelly, *Driverless Car Tech Gets Serious at CES*, CNN (Apr. 7, 2014, 8:53 AM), http://www.cnn.com/2014/01/09/tech/innovation/self-driving-cars-ces [https://perma.cc/3YNL-9JNA].

110. Vehicles that are fully self-driving are still in a testing phase. *See* WAYMO, *supra* note 5.

111. *See* ANDERSON ET AL., *supra* note 6, at 1.

112. *See* Roseman, *supra* note 105, at 5.

113. *Id.*

114. *Id.* at 5-6.

115. *See* Bruce Kennedy, *Top 5 Companies for Autonomous Vehicle Technology*, BENZINGA (July 25, 2014, 10:36 AM), http://www.benzinga.com/general/travel/14/07/4728393/top-5-companies-for-autonomous-vehicle-technology [https://perma.cc/QE6R-T7X9].

116. *See* Del-Colle, *supra* note 10 (describing the hardware and software that control an AV on the road).

117. *See* Andrew P. Garza, Note, *"Look Ma, No Hands!": Wrinkles and Wrecks in the Age of Autonomous Vehicles*, 46 NEW ENG. L. REV. 581, 587-88 (2012).

118. *Id.*

signs, other vehicles, and surrounding objects.[119] By putting together these technologies, AVs are able to interact with their surroundings in an entirely novel way.[120] These vehicles see everything that a driver would see, but they do so more quickly and more effectively than a human would.[121]

Surprisingly, Google has already released a self-driving prototype, which it showcased to the public in 2014.[122] Daimler-AG, Mercedes Benz, and Audi have also secured permits to test their vehicles on the road in California under a California law that allows testing on public roads.[123] Tesla, known for its advanced electric-vehicle technology, is also implementing advanced AV technology.[124] Amazingly, it is doing so with a *software* update pushed to its current fleet of vehicles over the air.[125] As AV technology continues to develop, the timeline for viability may continue to change, providing little certainty about what the future holds.[126] To be sure, automation will progress at different stages.[127]

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119. *Id.*

120. *See* Del-Colle, *supra* note 10 (describing the ability of the AV to maintain its own lane, steer, brake, and accelerate).

121. *See* ANDERSON ET AL., *supra* note 6, at xiv.

122. *See* WAYMO, *supra* note 5.

123. Carl Franzen, *Google's Self-Driving Cars and Others Get Permits to Drive in California*, THE VERGE (Sept. 22, 2014, 2:44 PM), http://www.theverge.com/2014/9/22/6828161/california-permits-self-driving-cars-google-audi-mercedes-benz [https://perma.cc/6UNR-S5HH].

124. Rhett Jones, *Tesla to Take Its Biggest Step Toward Fully Autonomous Cars Tomorrow*, GIZMODO (Jan. 8, 2017, 1:42 PM), http://gizmodo.com/tesla-to-take-its-biggest-step-toward-fully-autonomous-1790950298.

125. *Id.*

126. Danielle Muoio, *Automakers Are Slowing Their Self-Driving Car Plans—and That's a Good Thing*, BUSINESS INSIDER (Jan. 8, 2017, 3:01 PM), http://www.businessinsider.com/self-driving-cars-not-feasible-in-5-years-automakers-say-2017-1 (noting that "at this year's Consumer Electronics Show, Toyota pushed back on the idea that we are just a few years off from an autonomous reality. 'I need to make it perfectly clear, [full autonomy is] a wonderful, wonderful goal. But none of us in the automobile or IT industries are close to achieving true Level 5 autonomy. We are not even close,' Gill Pratt, the CEO of the Toyota Research Institute, said at CES."); *see also* Steve Hanley, *NASA and Nissan Team Up for Autonomous Cars*, GAS2.ORG (Jan. 16, 2015), http://gas2.org/2015/01/16/nasa-and-nissan-team-up-for-autonomous-cars [https://perma.cc/KY6Z-P64H] (noting that "NASA is embarking on an ambitious *five-year* program") (emphasis added).

127. *See* Joann Muller, *Baby Steps Toward Driverless Cars Deliver Huge Leaps in Safety*, FORBES (Sept. 11, 2014, 2:39 PM), http://www.forbes.com/sites/joannmuller/2014/09/11/baby-steps-toward-driverless-cars-deliver-huge-leaps-in-safety/ [https://perma.cc/LJX2-Y2TZ].

For example, a "driverless car"[128] is one in which there is no human operator to push "go" in the vehicle; the vehicle may be pre-programmed, for example, to pick up a child from school with no human operator present.[129] This may still be a distant dream.[130] A self-driving car, however, is much more plausible in the near future and promises, instead, to take over the basic operations of the vehicle, while the passenger fully relinquishes control.[131] As AV technology develops, so too will the laws governing it.[132]

Recently, with major manufacturers entering the automated technology industry,[133] states have begun passing laws that allow testing of AVs on the roads.[134] In this preliminary stage, legislation will necessarily evolve. Current laws[135] allow only testing of the vehicles on the road, and human operators may engage the automatic features only when the operator is able to quickly regain control in the event of an emergency.[136] These laws have garnered some criticism from supporters of AVs who call for legislation allowing for consumer operation and utilization of AVs on the road.[137] Even more unexplored, however, is the legal realm of AV case law.[138]

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128. This Article will not discuss driverless cars. Such technology, it seems, is the promise of the AV technology extended to a technological (and imaginative) extreme.

129. *See id.* ("There's a difference between fully autonomous cars that drive themselves, and highly automated vehicles, which can take over driving under certain conditions, like stop-and-go traffic, or long road trips.").

130. *Supra* note 126.

131. *See id.* ("[T]he Japanese engineer in the driver's seat kept his hands about an inch off the wheel during the entire demo, and when traffic ahead suddenly slowed, he didn't wait for the automatic braking feature to kick in.").

132. *See* Gabriel Weiner & Bryant Walker Smith, *Automated Driving: Legislative and Regulatory Action*, CTR. FOR INTERNET AND SOC'Y, http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action [https://perma.cc/5RZ3-HBFS] (last visited Dec. 27, 2016) (maintaining a list of current AV laws).

133. *See* Kennedy, *supra* note 115.

134. For a good list of such states, see Weiner & Walker Smith, *supra* note 132.

135. MICH. COMP. LAWS § 257.665 (2014).

136. *See* Andrew R. Swanson, *"Somebody Grab the Wheel!": State Autonomous Vehicle Legislation and the Road to a National Regime*, 97 MARQ. L. REV. 1085, 1096-99 (2014) (explaining the development of legislation).

137. *See* Melissa Anders, *Autonomous Vehicle Testing Now Allowed Under Michigan Law*, MLIVE (Dec. 27, 2013, 1:19 PM), http://www.mlive.com/politics/index.ssf/2013/12/autonomous_vehicle_testing_now.html [https://perma.cc/KMG2-W4CE].

138. *See infra* Section II.B.

B. Unchartered Territory: AV Technology Case Law

Case law proves to be particularly unhelpful in the analysis of AVs. With the lack of fully operational AVs on the road currently, no laws—and consequently cases—have dealt with criminal liability for the human operators of these machines.[139] The focus must thus shift to how courts treat other, similar technologies.[140] The courts have dealt with several such technologies, including both GPS and autopilot technologies.[141]

1. Rosenberg v. Harwood

Google proves to be a leader in the race to put AVs on the road for consumers.[142] It is thus fitting that Google's other technology provides the most apt analogy for liability in AVs.[143] The analogy comes from a little-known case from Utah's third judicial district: *Rosenberg v. Harwood*.[144] In *Rosenberg*, the plaintiff was using a Google GPS when she began walking down a busy street.[145] Upon getting injured,[146] she sued Google—asserting four causes of action[147]—essentially claiming that the GPS unit was defective for its intended purpose; it should have warned her of the danger inherent in walking down the street.[148]

The court found that Google did not owe the plaintiff a duty, because the two parties had not established a "contractual or

139. *See* Funkhouser, *supra* note 7, at 439-40.

140. For an interesting discussion of the analogous problem of unmanned drone use, see generally J. Tyler Black, *Over Your Head, Under the Radar: An Examination of Changing Legislation, Aging Case Law, and Possible Solutions to the Domestic Police Drone Puzzle*, 70 WASH. & LEE L. REV. 1829 (2013).

141. *See infra* Subsections II.B.1-2.

142. Ben Axelson, *Google Shows Off Self-Driving Car that Could Be on the Road in 5 Years*, SYRACUSE.COM (Oct. 28, 2014, 11:07 AM), http://www.syracuse.com/news/index.ssf/2014/10/google_self-driving_car.html [https://perma.cc/E8JK-N38J].

143. *Id.* (noting that Google wants to lead the AV initiative).

144. Rosenberg v. Harwood, No. 100916536, slip op. at 1 (Utah 3d. Jud. Dist. Ct. May 27, 2011), http://blog.ericgoldman.org/archives/2011/06/injured_pedestr.htm [https://perma.cc/6XGZ-BDFR] (to access the pdf and corresponding pagination used in this note, follow the "pdf" link near the top of the page in brackets after the case citation near the top of the page).

145. *Id.*

146. The plaintiff was walking across a rural highway, onto which the GPS unit had led her. The opinion does not give the details of the street or her injury. *Id.*

147. She sued for general negligence, failure to warn, strict liability-defective design, and strict liability-failure to warn. *Id.*

148. *Id.*

fiduciary relationship" that would give rise to Google's duty to warn the plaintiff not to walk down a street unfit for pedestrians.[149] The court further said, "[E]stablishing a special relationship likely requires a plaintiff in a case such as this to show that the defendant 'deprive[d] the [plaintiff] of his normal opportunities for protection.'"[150] Because the GPS simply provided an added benefit without depriving the plaintiff of her existing protections, the court found in favor of Google.[151] Although the plaintiff in *Rosenberg* found no favor with the court in Utah, other courts have heard cases involving technology more similar to AV technology: airplane autopilot systems.[152]

2. Glorvigen v. Cirrus Design Corp.

The autopilot function in modern airplanes may also provide an adequate analogy, considering that AVs arguably employ a form of automobile autopilot.[153] *Glorvigen v. Cirrus Design Corp.* involves airplane autopilot technology, and the court offered an analysis of manufacturer liability.[154] In *Glorvigen*, the plaintiff pilot's estate brought a suit against the manufacturer of the autopilot technology,[155] alleging a failure to properly train the pilot on the use of the autopilot technology.[156]

The court, echoing a decision by the Minnesota Supreme Court, adopted the reasoning of the Restatement (Second) of Torts, which mandates that "[o]ne who supplies directly or through a third person a chattel for another to use is subject to liability . . . for physical harm caused by the use of the chattel in the manner for

149. *Id.* at 3.

150. *Id.* at 3 n.5 (quoting RESTATEMENT (SECOND) OF TORTS § 314A(4) (AM. LAW INST. 1965)).

151. *Id.* at 3, 9-10.

152. *See, e.g.*, Glorvigen v. Cirrus Design Corp., 796 N.W.2d 541, 542, 544 (Minn. Ct. App. 2011).

153. *See* Muller, *supra* note 127.

154. *See Glorvigen*, 796 N.W.2d at 544.

155. According to an expert witness:

> [A]n autopilot will do a lot of good things for the pilot of an aircraft depending on the capabilities of that particular autopilot and this one is a very good one. In its most basic form, it will keep the wings level. It will also maintain a heading across the ground and it will maintain altitude if it's all programmed properly to do that.

Id. at 547.

156. *Id.* at 546.

which and by a person for whose use it is supplied."[157] This liability attaches if the supplier: (1) has actual or constructive knowledge that "the chattel is or is likely to be dangerous for the use for which it is supplied;" (2) "has no reason to believe" that the users of the chattel recognize that danger; and (3) "fails to exercise reasonable care to inform" the users of the chattel that its use will be dangerous in the relevant use.[158] In analyzing the claim pursuant to this standard, the court held that the plaintiff was not entitled to relief for two reasons.[159] First, the manufacturer of the airplane did not have a duty to train the pilot in the use of the autopilot technology because the training given to the plaintiff was "ancillary training" and therefore outside of the scope of the defendant's duty.[160] Secondly, in a more technical argument, the court held that the negligence claim amounted to a claim of "educational malpractice," an action barred by state law.[161] The court thus made clear that the manufacturer of a sophisticated technology, even one that purports to fly an airplane on autopilot, may not be held liable for failing to adequately[162] train the operator on its use.[163] AV technology manufacturers will face the same issues regarding the adequacy of warnings, with the added potential liability incurred when the product autonomously breaks the law.[164]

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157. *Id.* at 550 (adopting RESTATEMENT (SECOND) OF TORTS § 388 (AM. LAW INST. 1965)).

158. *Id.* (quoting RESTATEMENT (SECOND) OF TORTS § 388).

159. *Id.* at 551, 555.

160. *Id.* at 551-52 (holding that "we find no support in the law for respondents' proposition that Cirrus's duty to warn included an obligation to train Prokop to proficiently pilot the SR22—which is the crux of respondents' claims").

161. *Id.* at 555 (holding that "[o]ur conclusion that the claims are barred under the educational-malpractice doctrine forecloses relief under the other liability theories asserted by respondents").

162. At issue in this case is training the pilot to *proficiency* in the use of the technology. Presumably, the lack of "proficient" training led to the deaths of the pilots. Notably, the court maintained that manufacturers, though they have a duty to warn, have no duty to train users to the level of proficiency. *Id.* at 552 (noting, "respondents' contention that the duty to warn by providing adequate instructions for safe use includes an obligation to train the end user to proficiency is unprecedented").

163. *Id.* at 552, 558.

164. *See infra* Section II.C.

C. Products Liability in a Criminal Framework

AVs, like human-operated automobiles and airplanes, will likely face products liability actions.[165] Currently, products liability suits are based on harm to the user caused by a defect in the product.[166] Such a defect may be in the manufacturing of the product, the product's design, or a failure to affix on the product adequate warnings regarding its use.[167] The Restatement (Third) of Torts defines products liability: "One engaged in the business of selling or otherwise distributing products who sells or distributes a defective product is subject to liability for harm to persons or property caused by the defect."[168] As these suits involve making the user whole after injury to a person or property resulting from harm caused by the product, they do not hold the product manufacturer liable for criminal violations incurred by the operator while using the product.[169] In other words, manufacturers are liable only when there has been harm to persons or property, so liability does not include monetary loss from a fine or monetary penalty.[170] Products liability is a complicated field of study, and at least one commentator, Kevin Funkhouser, has considered how products liability will attach to the complicated systems behind AVs.[171] Funkhouser notes "how ill-prepared products liability law is and the potential consequences to both manufacturers and potential plaintiffs,"[172] but also that "there are many instances where [manufacturing defect] claims may be well equipped to deal with [AVs]" such as the faulty installation of a radar sensor.[173] Ultimately, though, "[p]laintiffs will be limited in the claims that they can bring relating to autonomous vehicles,"[174]

165. *See generally* Funkhouser, *supra* note 7.

166. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (AM. LAW INST. 1998).

167. *Id.* at § 2.

168. *Id.* at § 1.

169. The Restatement (Third) of Torts holds manufacturers liable for harm to person or property and for economic loss due to injury. *Id.* at § 1 cmt. d. This "harm" does not include monetary loss from a fine or citation, as it includes only the economic loss suffered due to the actual physical injury. *Id.* at § 21 cmt. b.

170. *Id.* at § 1 cmt. d.

171. *See generally* Funkhouser, *supra* note 7.

172. *Id.* at 440.

173. *Id.* at 453.

174. *Id.* at 458.

particularly because no cause of action exists to recover criminal penalties from a product defect.[175]

No case law seems to indicate that product manufacturers are held liable for the fines incurred by users of the product, presumably because all products require user input to perform illegal acts; the user generally causes the harm and thus may not recover.[176] For example, media piracy through Internet downloads does not make the computer manufacturer liable to media producers simply because the computer was used in downloading the material.[177] AVs, however, promise to be self-driving and to act without user control, thus vitiating the user's apparent fault.[178] To date, it seems that one brand of a police-radar scanner is the only product that reimburses the user for a criminal fine imposed during its use.[179] Even in that unusual situation, however, the company offers the reimbursement; the law does not compel it.[180] Thus, the usual products liability framework fails, as it does not account for the unusual relationship between AVs and their operators.[181] To solve the apparent gap in available causes of action, then, courts must look to corporate criminal liability.

III. CORPORATE CRIMINAL LIABILITY: CAN THE CORPORATE PERSON BE A CRIMINAL?

With the majority of AV manufacturers being corporations, it is imperative to understand how exactly a corporation might be held

175. *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (AM. LAW INST. 1998); *supra* note 169 and accompanying text.

176. *See, e.g.*, *Software Enforcement and the U.S. Law*, THE SOFTWARE ALLIANCE, http://www.bsa.org/anti-piracy/tools-page/software-piracy-and-the-law [https://perma.cc/H7HH-78LU] (last visited Dec. 27, 2016) (noting that consumers are liable for copyright infringement after "pirating" media); RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 17(a) (providing for a reduction in recovery of damages "if the conduct of the plaintiff combines with the product defect to cause the harm").

177. *See* THE SOFTWARE ALLIANCE, *supra* note 176.

178. *See* ANDERSON ET AL., *supra* note 6, at 3 (describing the fullest level of automation).

179. *See The K40 Five-Star Guarantee*, K40 ELECTRONICS, http://www.k40.com/products/ticket-free-guarantee/ [https://perma.cc/GJ3V-XKHD] (last visited Dec. 27, 2016) (promising to pay the fine on a speeding ticket received while using the police radar scanner technology).

180. *See id.*

181. *See* Funkhouser, *supra* note 7, at 458 (explaining that "[t]he technology is novel and complex").

criminally liable *at all*. While it remains unclear whether a particular AV may commit a crime,[182] one must also consider a preliminary issue regarding the nature of a corporation as a person: can a corporation commit—and be held liable for—a crime? Particularly when the newest state legislation mandates that the automated system itself is the "driver or operator"?[183] Because AVs fit poorly within the products liability framework,[184] the manufacturer-corporations of these machines could instead be held criminally liable for the crimes committed during their use, particularly when those AVs act as agents of the corporation.[185]

A. Agency Action: The Structure of a Corporation

As early as 1819, the United States Supreme Court recognized and defined a corporation: "It is, in short, an artificial person, existing in contemplation of law, and endowed with certain powers and franchises which . . . are yet considered as subsisting in the corporation itself, as distinctly as if it were a real personage."[186] As an artificial person, the corporation may sue on behalf of—and be sued by—its own members, and it may also freely contract with those members as it would with other entities.[187] As the principles of the corporation have developed, so too has the concept of corporate criminal liability, with corporate criminal liability being a relatively new legal concept.[188] Because of its recent advent, and quite problematically, corporate criminal law "has proceeded largely without reference to any intelligible body of principle," leaving the question of corporate criminal liability for AV technology unanswered.[189]

To evolve the principle more effectively, the most recent Model Penal Code offers criteria for corporate criminal liability.[190] A

182. *See infra* Sections IV.B-C.

183. *See supra* Part I; S.B. 995, § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

184. *See supra* Section II.C.

185. *See* MODEL PENAL CODE § 2.07(1)(c) (AM. LAW INST. 2015) (defining criminal liability predicated upon agent action).

186. Trs. of Dartmouth Coll. v. Woodward, 17 U.S. 518, 667 (1819).

187. *See id.* at 667-68.

188. *See* MODEL PENAL CODE, § 2.07 cmt. (AM. LAW INST. 1985); DRESSLER, *supra* note 41, at 900.

189. DRESSLER, *supra* note 41, at 900 (quoting MODEL PENAL CODE § 2.07 cmt. (1985)).

190. *See* MODEL PENAL CODE § 2.07 (AM. LAW INST. 2015).

corporation may be held criminally liable if so dictated by statute, by omission of a legal obligation, or if the crime was authorized, solicited, or "recklessly tolerated by the board of directors."[191] Unsurprisingly, the structure of such liability reflects the cornerstone of corporate function: agency.[192] An agency relationship forms where two parties agree that one party, as the agent, will act on behalf of another party, called the principal.[193] The agent, acting within the appropriate scope of agency, remains subject to the principal's direction and control.[194] In the corporate setting, companies "have hundreds, sometimes thousands, of employees or agents."[195] Each of these agents, authorized to act on behalf of the corporation, subject the principal-corporation to criminal liability for any crimes perpetrated by the agent while acting within the scope of agency.[196] Thus, to determine a corporation's criminal liability for the crimes attributable to an AV, a court would have to determine the scope of the corporation's involvement in the crime, including the role of its agents.[197] Due to the inconsistent body of law governing such liability, however, the court's task will prove difficult.[198]

B. No "Intelligible Body of Principle": Corporate Criminal Jurisprudence

As the Model Penal Code notes, the case law surrounding corporate criminal liability lacks an "intelligible body of principle" by which it has developed.[199] Generally, however, due to the difficult nature of holding corporations liable for the criminal offenses of their agents, it is much more common to hold agents responsible for

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191. *Id.* at § 2.07(1)(a)-(c).

192. *See* LEE HARRIS, MASTERING CORPORATIONS AND OTHER BUSINESS ENTITIES 3 (2009) ("For instance, public corporations are legally recognized entities, but can do very little without the help of agents.").

193. *See id.* at 5 (paraphrasing RESTATEMENT (THIRD) OF AGENCY § 1.01).

194. *Id.*

195. *Id.* at 3.

196. MODEL PENAL CODE § 2.07(1)(c) (AM. LAW INST. 2015).

197. *See* State v. Christy Pontiac-GMC, Inc., 354 N.W.2d 17, 19-20 (Minn. 1984) ("Criminal liability, especially for more serious crimes, is thought of as a matter of personal, not vicarious, guilt. One should not be convicted for something one does not do. In what sense, then, does a corporation 'do' something for which it can be convicted of a crime?").

198. *See* DRESSLER, *supra* note 41, at 900.

199. *See id.*

the acts of their principal corporations.[200] Though cases of corporate criminal prosecutions are scant, the court in *State v. Christy Pontiac-GMC, Inc.* held that corporations can be prosecuted and convicted for criminal offenses.[201] In *Christy*, the sales manager at a car dealership engaged in rebate swindling after telling several customers that no rebate was available on the purchase of their new cars due to the expiration of the rebate period.[202] The salesman then backdated the new-car purchase orders so that the sale date would be within the rebate period and submitted them to GM.[203] Because the salesman forged the customers' signatures and submitted the purchase orders with false rebate-eligible dates, he was able to embezzle the rebate money for himself without the customers' knowledge.[204]

Relying on agency principles, the court established that a corporation may be found "guilty of a specific intent crime committed by its agent" if: (1) that agent committed the crime within his scope of employment; (2) the act was beneficial to the corporation's business; and (3) corporate management expressly or implicitly authorized the action.[205] Employees of Christy Pontiac, acting as agents of the car dealership, authorized and signed the faulty rebate forms. Because the agent-employees were acting in the scope of their employment, this fraudulent act opened the principal-corporation to the same criminal liability[206] as was applicable to the

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200. *See, e.g.*, United States v. Park, 421 U.S. 658, 671 (1975) (citing State v. Burnam, 128 P. 218 (Wash. 1912); Overland Cotton Mill Co. v. People, 75 P. 924 (Colo. 1904)).

201. *Christy*, 354 N.W.2d. at 19.

202. *Id.* at 18.

203. *Id.*

204. *Id.*

205. *Id.* at 20. Specifically, the court established:

> Secondly, as to the kind of proof required, we hold that a corporation may be guilty of a specific intent crime committed by its agent if: (1) the agent was acting within the course and scope of his or her employment, having the authority to act for the corporation with respect to the particular corporate business which was conducted criminally; (2) the agent was acting, at least in part, in furtherance of the corporation's business interests; and (3) the criminal acts were authorized, tolerated, or ratified by corporate management.

Id.

206. It is important to note that the court in *Christy* officially held only that corporations may be liable for "theft and forgery," but the principles remain the same; if the agent performs illegal functions in his scope of employment, criminal liability may shift to the principal corporation. *Id.* at 19.

agents themselves.[207] This liability, the court noted, rests upon the legislature's intention "that corporations are to be considered persons" within the Minnesota criminal code.[208] Accordingly, the court affirmed that the principal corporation, Christy Pontiac, was criminally liable for the acts of its salesman as agents of the corporation.[209] Similarly, as part of their general criminal frameworks, both Michigan's Penal Code and the Model Penal Code include "corporations" within their definition of "person."[210] Under the agency principles expressed in *Christy*[211] and the Model Penal Code,[212] then, if AVs were found to be legal persons, they could act as agents on behalf of their principal manufacturer-corporations. The key thus lies in the legal status of AVs—they are either legal persons or merely advanced machines.[213]

C. Whether AVs are Legal Persons

Although corporate criminal liability certainly provides enough problems of its own,[214] courts will also need to consider the legal status of AVs.[215] Courts may be forced to determine whether an AV constitutes a "person" for the purpose of agent liability.[216] According to the Restatement (Third) of Agency, a person includes a natural person, an organization with legal rights, or "any other entity that has legal capacity to possess rights and incur obligations."[217] Interestingly, the comments to this section of the Restatement spend several paragraphs refining "person."[218] For the purposes of liability,

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207. *Id.* at 20-21.

208. *Id.* at 19.

209. *Id.* at 20-21.

210. MICH. COMP. LAWS § 750.10 (1931); MODEL PENAL CODE § 1.13(8) (AM. LAW INST. 2015) (stating that "'person,' 'he' and 'actor' include any natural person and, where relevant, a corporation or an unincorporated association").

211. *Christy*, 354 N.W.2d. at 20.

212. MODEL PENAL CODE § 2.07(1)(c) (AM. LAW INST. 2015).

213. *See infra* Section III.C.

214. *See supra* Section III.B.

215. *See* Duffy & Hopkins, *supra* note 12, at 454-55 (observing that "[a]s autonomous cars become increasingly prevalent, the risk and likelihood of collision with other vehicles rises. This poses a problem . . . because current state laws concerning automobile accident liability assume a human driver." And, further, "existing laws do not directly address the determination of liability").

216. *See Christy*, 354 N.W.2d at 20 (discussing a principle-corporation's liability induced by its agent's liability).

217. *See* RESTATEMENT (THIRD) OF AGENCY § 1.04(5) (AM. LAW INST. 2006).

218. *See id.* at § 1.04 cmt. e.

it says, "it is not possible for an inanimate object or a nonhuman animal to be a principal or an agent."[219] Furthermore, "[*a*]*t present*, computer programs are instrumentalities of the persons who use them. If a program malfunctions . . . the legal consequences for the person who uses it are no different than the consequences stemming from the malfunction of any other type of instrumentality."[220] AVs, though highly sophisticated, are, at their core, computer programs effectuating motion in mechanical structures.[221] Applying the Restatement's definition, the AV remains an inanimate object, not a principal or an agent;[222] it is an instrumentality of the person who presses "go," even though the complex computer program promises to act fully autonomously.[223]

That said, Michigan's AV law directly contradicts this notion. S.B. 995 clearly says that the automated driving system is the driver or operator "for purposes of determining conformance to any applicable traffic or motor vehicle laws."[224] In that respect, the computer program is not the "instrumentality" of the agent at all. The program *is* the agent.[225]

Prior to this law, AVs currently did not have legal rights or obligations. According to the pre-amendment MVC, AVs may be operated on Michigan roads only if a human operator "is present in the vehicle while it is being operated" who can retake immediate control if necessary.[226] This section carved out a narrow exception to Michigan's ban on automated driving.[227] The pre-amendment Code then held the *human operator*, and not the vehicle, liable for violations of the road-testing provision and any other section of the MVC.[228] This, in large part, was due to the general restriction on operating the vehicle in "automatic mode"; if one could not drive in automatic mode without an approved test driver, then one likely could not claim that the car itself is legally liable for malfeasance.[229]

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219. *Id.*

220. *Id.* (emphasis added).

221. *See* ANDERSON ET AL., *supra* note 6, at 2-3.

222. *See* RESTATEMENT (THIRD) OF AGENCY § 1.04 cmt. e.

223. *See* ANDERSON ET AL., *supra* note 6, at 2-3 (noting the varying levels of interaction between the human operator and the AV system).

224. S.B. 955 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

225. *See id.*

226. MICH. COMP. LAWS § 257.665(2)(b) (2014).

227. MICH. COMP. LAWS § 257.663 (repealed 2016).

228. *Id.* § 257.666(1).

229. *Id.* §§ 257.663, 257.665.

But considering the new liability imposed on the automated driving system,[230] it seems apparent that the AV now *does* have "legal capacity to possess rights and incur obligations."[231] S.B. 995 is clear; when in automated mode, the automated driving system is the operator.[232] And, as if to reiterate the AVs agency, the law mandates that the automated driving system "shall be deemed to satisfy *electronically* all *physical* acts required by a driver or operator of the vehicle."[233] Thus, according to general agency principles outlined in the Restatement, one is hard-pressed to argue that the AV is not a legal person with "rights and obligations."[234]

By making the automated driving system responsible, the new law seems to take AV manufacturers at their word—full automation takes the human out of the driver seat.[235] And if the car promises to be responsible for the driving operation, then, put simply, it is. As AV technology continues to develop, it may be rightly said that the vehicle, and not the human operator, broke the law.[236] So to answer with certainty the criminal-law questions posed by this promising technology, legislatures and courts should recognize a new solution: products culpability.

IV. RIGHTING A WRONG: THE BEST SOLUTION TO CRIMINAL LIABILITY FOR AVS

Though several scholars have discussed the criminal issues surrounding AVs,[237] few, if any, have addressed the daily criminal

230. S.B. 995 § 665(5) (codified at MICH. COMP. LAWS ANN. § 257.665(5)).

231. *See* RESTATEMENT (THIRD) OF AGENCY § 1.04(5) (AM. LAW INST. 2006).

232. S.B. 995 § 665(5) (codified at MICH. COMP. LAWS ANN. § 257.665(5)).

233. *Id.* (emphasis added).

234. *See* RESTATEMENT (THIRD) OF AGENCY § 1.04(5) (AM. LAW INST. 2006).

235. WAYMO, https://waymo.com (last visited Jan. 14, 2017) (promising, "With fully self-driving technology, you'll be able to get where you want to go at the push of a button—without the need for a person at the wheel").

236. *See* Lauren Abdel-Razzaq, *Self-Driving Car Technology Moves to Forefront at NAIAS*, DETROIT NEWS (Jan. 16, 2015, 2:22 PM), http://www.detroitnews.com/story/business/autos/detroit-auto-show/2015/01/13/self-driving-car-technology-naias/21731773/ [https://perma.cc/B5R4-Z94Z] ("[P]arts of the self-driving experience are on display now at Detroit's Cobo Center: three-dimensional cameras, lane-correction devices and other tools that increasingly remove the driver from the tasks of steering, braking and accelerating.").

237. *See generally* Douma & Palodichuk, *supra* note 8 (discussing potential criminal liability related to AVs).

law issues that will arise with the advent of driverless vehicles.[238] A minor malfunction in the radar may cause the car to pass a stop sign, run a red light, or exceed the speed limit.[239] If and when this happens, consumers will lack a legal claim to sue under products liability, and manufacturers will be unable to predict their liability for the malfeasance.[240] To remedy this gap in legal predictability, manufacturers should be held liable for AV-caused crimes where their products are shown to be culpable for certain criminal acts and harm caused thereby.[241]

A. A New Kind of Liability

At a basic level, the law will have to deal with a new area of criminal violations that are wholly the fault of the AV.[242] This new proposed category of actions against AV manufacturers may be most appropriately called *products culpability*. This new concept is necessary because no other technology promises to take over such a complicated process while allowing the human operator to completely rely on the technology to follow a comprehensive system of rules.[243] With such complex technology, however, comes a complex solution.[244] Detailed state vehicle codes govern everything from the amount of alcohol that a driver may consume to when the driver must stop at a yellow light.[245] *Replacing* that driver—who operates in the complex framework of the vehicle code—with a computer makes the legal treatment of that new AV operator extremely difficult.[246]

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238. Note that AVs are *driverless*, not *operator-less* vehicles. That is, the most likely coming technology will allow the vehicle to operate autonomously with an operator still pressing "go." A full chauffer system, which would allow operator-less vehicles, is far in the future. *See* ANDERSON ET AL., *supra* note 6, at 2-3.

239. *See* Del-Colle, *supra* note 10 (acknowledging that the technology will never be flawless).

240. *See supra* Section II.C.

241. *See infra* Sections IV.B-C.

242. *See* Funkhouser, *supra* note 7, at 439 (noting the gap in legislation surrounding AVs).

243. *See* Del-Colle, *supra* note 10.

244. *See* Funkhouser, *supra* note 7, at 458 (observing the complexity of the technology).

245. *See supra* Part I.

246. *See* MICH. COMP. LAWS § 257.13 (1949) (defining "driver" for purposes of the MVC as "every person who drives or is in actual physical control of a vehicle").

For purposes of analogy, consider a common piece of technology: the smart phone. Nearly two-thirds of Americans own the technology.[247] The technology could be used to make illegal prank calls, order illicit drugs, browse illegal websites, or download illegal content.[248] To do any of those illegal acts, though, the operator of the technology must input certain parameters into the phone that will make the phone access illegal content or become an instrumentality in a criminal act.[249] This is not the case for the AV.[250] If the purchaser of the AV buys the product under the marketed promise that the technology will follow the traffic code,[251] then it is reasonable to expect the AV to do exactly that. If the vehicle fails to avoid a stopped emergency vehicle and the human operator gets ticketed, then the operator has detrimentally relied on the failed technology.[252] It is thus reasonable to hold the *manufacturer*, and not the reasonably inattentive human being, legally liable for breaking that law. In short, the culpability must rest with the person or *thing* inputting the illegal commands.[253] In the case of the cell phone, the human who willfully downloads illegal content remains culpable.[254] For the AV, however, the automated driving system that controls the gas pedal remains at fault for exceeding the speed limit.[255] The law should recognize that the passive human operator–passenger has the legal right to require reimbursement from the culpable manufacturer for money damages he or she may suffer.

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247. Jon Fingas, *Two-Thirds of Americans Now Have Smartphones*, ENGADGET (Feb. 11, 2014), http://www.engadget.com/2014/02/11/two-thirds-of-americans-now-have-smartphones [https://perma.cc/38S9-WLNE].

248. For example, *see* Robinson Meyer, *Absurd: The Very Basic Thing It's Still Illegal to Do With Your Mobile Phone*, THE ATLANTIC (Nov. 15, 2013), http://www.theatlantic.com/technology/archive/2013/11/absurd-the-very-basic-thing-its-still-illegal-to-do-with-your-mobile-phone/281553 [https://perma.cc/5JCH-FAGU] (explaining how altering the firmware on a phone, or "unlocking" a phone, breaks federal copyright law).

249. *See id.* (noting that a smart phone operator may break the law simply by "chang[ing] the software on [one's] phone").

250. *See* ANDERSON ET AL., *supra* note 6, at 2-3.

251. *See* Chin, *supra* note 9 (describing the promise of AV technology).

252. *See* MICH. COMP. LAWS § 257.653a (2001).

253. *See* Meyer, *supra* note 248 (assigning fault to the cell phone user).

254. *Id.*

255. *See* WAYMO, *supra* note 5.

B. The Problem of *Actus Reus*

To remedy the complications inherent in assigning fault to either the human operator or the AV, one must return to the basic concepts of criminal law.[256] To be guilty of any crime, the perpetrator must commit a voluntary act that causes a harm.[257] This act, called the *actus reus*, is the first element to be satisfied in a criminal violation because the suspect must personally or proximately cause a harm through his or her own voluntary action.[258] Without an illegal action, there would be no reason to hold the actor criminally liable for the harm.[259] Importantly, in the case of AVs, the human operator–passenger likely does no voluntary act that would satisfy the *actus reus* element.[260] This problem arises because the human operator of the vehicle is not acting at all when operating a fully autonomous vehicle.[261] Though the human operator may push the "go" button or input the destination into a navigation device, the human operator is in no way causing—or *acting* in the commission of—the violation of the code.[262] Just as a human passenger in a standard vehicle fully relinquishes control to the human driver, so too does the human operator in an AV fully relinquish control to the automated driving system after inputting a destination.[263]

Similarly, neither the AV nor the human programmer of the autonomous software *acts* to commit the crime.[264] The AV manufacturer is no more engaging in the *actus reus* of running a stop sign than is the manufacturer of a gun engaging in the *actus reus* of shooting an innocent victim. Unfortunately, few useful analogies to AVs exist. At least for now, guns cannot be programmed to autonomously shoot an innocent victim.[265] In the age of AV technology, however, the manufacturer *does* intentionally remove the

256. *See* DRESSLER, *supra* note 41, at 5 n.5 (examining the purposes of criminal law, stating "the judiciary . . . ensure[s] that the rights of the minority are respected" through the criminal process).

257. MODEL PENAL CODE § 2.01 (AM. LAW INST. 2015).

258. DRESSLER, *supra* note 41, at 127.

259. *Id.* (describing the purposes for requiring *actus reus*).

260. *See supra* notes 42-48 and accompanying text.

261. *See* Del-Colle, *supra* note 10.

262. *See supra* note 13 and accompanying text.

263. *See infra* text accompanying note 299; Chin, *supra* note 9.

264. *See* Del-Colle, *supra* note 10 (describing the driver relinquishing control and the AV maneuvering via advanced integrated technologies).

265. Or presumably, if they could be so programmed, there would be a user internationally inputting the "shoot" command into the gun.

human operator from controlling the vehicle, which effectively nullifies the operator's *actus reus*. The AV promises to take over the previously human-held driving responsibilities.[266]

In many ways, exceeding the speed limit in an AV is similar to a third party physically grabbing the arm of an innocent person and forcing him to batter someone else. There is simply no voluntary act when someone else *makes* the would-be defendant do a bad act, and there is no human voluntary act when an automated driving system causes the AV to exceed the speed limit.[267] It is the AV that does this in lieu of the human operator. Without this voluntary act, the human operator *does not satisfy the actus reus* element of the crime because the human operator is not acting at all.[268] The criminal law should thus not hold that human responsible.[269] Instead, the law should hold the AV and its manufacturer criminally culpable through the products culpability cause of action. The harm still occurs, and the criminal law must deter and punish harmful, illegal behavior.[270]

C. A Harm Without an Actor

Problematically, even without a clearly defined human actor, the harm inherent in violating the vehicle code still occurs. Vehicle codes have recognized that a harm results when a driver passes through a red light,[271] and that harm occurs whether the human operator personally acts in the commission of the act or not. That is, regardless of the agent responsible for crossing illegally into the intersection, there is still a good chance that the car will collide with a vehicle rightfully passing through the adjacent green light. By choosing to operate any vehicle, a human operator must acknowledge the possibility of harm arising from its operation; vehicle collisions are simply a reality of using automobiles.[272] That is, even if the AV technology is "driving," the human must know

266. *See* Del-Colle, *supra* note 10 (describing the human driver relinquishing control to the AV); *supra* note 13 and accompanying text.

267. *See supra* note 44 and accompanying text.

268. *See* ANDERSON ET AL., *supra* note 6, at 3 (indicating that full Level 4 automation leaves the driver with few responsibilities).

269. *See* DRESSLER, *supra* note 41, at 127.

270. *Id.* at 32-33 (describing the theories of punishment as a deterrent for future harm).

271. MICH. COMP. LAWS 257.612(1)(c)(i) (2014).

272. *See* INSURANCE INSTITUTE FOR HIGHWAY SAFETY, *General Statistics*, http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/state-by-state-overview (last visited Jan. 14, 2017).

that running a red light would still cause a harm that needs to be deterred.[273] Yet, with the promise of AV technology, humans should justifiably rely on the AV to drive for them—to keep them reasonably safe so long as the human operator is working within the parameters set by the manufacturer.

To solve this apparent incongruity in the law, the state legislatures should adopt the concept of products culpability. Similar to products liability, this concept is rooted in negligence[274] and will rely on the relationship between the manufacturer and the human operator of the AV. It holds the manufacturer liable for a breach of duty owed to the human operator that results in a harm.[275] This concept should be divided into three tiers: civil infractions, strict-liability infractions, and intent-based infractions.

1. *Civil Infractions: Lacking the Criminal Element*

For civil infractions, the manufacturers of AVs should make clear to the individual consumer in the purchasing contract for the AV that any fees incurred by the human operator due to civil infractions caused by the AV will remain the sole responsibility of the human operator. Otherwise, the numerous civil infractions incurred by owners of AVs would become an inefficient and unmanageable source of litigation for manufacturers.[276] Prohibited conduct leading to civil infractions ranges from failing to remove a vehicle from the scene of an accident to failing to stop at a flashing red light.[277]

With such widely varying examples of civil infractions, both AV manufacturers and consumers would be best served through a

273. *See* DRESSLER, *supra* note 41, at 35 (discussing the purpose of punishment as a deterrent).

274. *See supra* note 63 and accompanying text.

275. Parrot v. Wells, Fargo & Co., 82 U.S. (15 Wall.) 524, 537 (1872) (noting that "[a] party charging negligence as a ground of action must prove it. He must show that the defendant, by his act or by his omission, has violated some duty incumbent upon him, which has caused the injury complained of").

276. Civil infractions govern a wide range of prohibited conduct, including "disobey[ing] the instructions of a traffic control device"; failing to stop at a flashing red signal; and failing to move a vehicle from the scene of an accident. MICH. COMP. LAWS §§ 257.611(1), 257.614(1), 257.618a (2016). If AV use becomes widespread, the claims against manufacturers for civil infractions would become unmanageable. *See* Chin, *supra* note 9 (predicting the systematic implementation of AV technology).

277. *See supra* note 276.

contractual assumption of such penalties at the time of purchase to avoid unnecessary contention over penalties in the future.[278] Because, as a matter of law, civil infractions are not considered criminal in nature,[279] the *culpability* for such action need not pass to the AV manufacturer. Whereas a criminal statute imposes moral fault on the actor for the harm caused, civil infractions merely intend to deter minor violations of traffic policies.[280] Furthermore, as a matter of public policy, there are simply too many civil infractions to pass criminal culpability to the manufacturer for each infraction, even though the owner may suffer financial harm. Of course, if the AV running the red light were to cause an accident or further injury, then the manufacturer may be liable for that harm under products liability.[281] For the actual civil infraction, though, the law should hold the human operator liable as a matter of strict, contractually defined liability.[282]

2. *Strict-Liability Criminal Infractions*

For strict-liability criminal infractions, the law should recognize a cause of action for products culpability. Examples of strict-liability infractions include moving violations that cause injury or death to another and failing to properly avoid a stopped

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278. The Restatement of Torts says:

> When permitted by contract law, substantive law governing the claim, and applicable rules of construction, a contract between the plaintiff and another person absolving the person from liability for future harm bars the plaintiff's recovery from that person for the harm. Unlike a plaintiff's negligence, a valid contractual limitation on liability does not provide an occasion for the fact finder to assign a percentage of responsibility to any party or other person.

RESTATEMENT (THIRD) OF TORTS: APPORTIONMENT OF LIABILITY § 2 (AM. LAW INST. 2000) (emphasis added). Several such contractual provisions will be necessary to ensure a proper legal relationship between AV manufacturers and consumers.

279. This is true in Michigan, at least. *See* MICH. COMP. LAWS § 257.907(1) (2015).

280. *See* DRESSLER, *supra* note 41, at 32-33, 35 (discussing the purpose of punishment as a deterrent); MICH. COMP. LAWS § 257.6a (2016) (stating that civil infractions do not amount to a crime).

281. *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (AM. LAW INST. 1998).

282. Again, this conclusion stems simply from public policy and the general principles of criminal law noted in this section. *See* DRESSLER, *supra* note 41, at 35 (discussing the purpose of punishment as a deterrent; deterring civil infractions are not included in those purposes).

emergency vehicle.[283] The problem with holding the human operator responsible for strict-liability criminal offenses lies in the *actus reus*.[284] The human operator of an AV has not, in fact, done anything voluntarily to injure another person. With the promise of AV technology, a human operator should reasonably believe that the software and hardware in the vehicle has full, effective control.[285]

The recent change in the MVC supports this conclusion because it makes the automated driver system the "driver or operator."[286] In other words, it places the responsibility on the *car*, instead of on the human inside the car. Although the law requires a human in the testing phase,[287] fully autonomous vehicles may be operated on Michigan roads with the system fully in control.[288] It follows, then, that the AV would be responsible for the violation of any strict-liability laws. That is, laws that require an *actus reus* but no *mens rea*. Further, the new law deems the automated driving system the actor—the one capable of committing the *actus reus*—which sets up a system of criminal liability imposed on the manufacturer of the AV. As noted *supra* Part III, the AV would be the agent of the manufacturer. Because the strict-liability laws in the MVC make the actor liable, the principal of the agent, i.e., the manufacturer of the AV, would be liable for the violation. This synthesis of agency principles follows directly from the Michigan legislature's insistence that the actual *system* is the driver of a fully autonomous vehicle.[289] And the need for an action in products culpability becomes clear.

So, to make AVs a clearly defined part of the market, further legislation is necessary.[290] Because the harm still occurs at the time of

283. *Supra* Section I.B.

284. *See supra* notes 268-69 and accompanying text.

285. *See* Verne Kopytoff, *Will We Need a Learner's Permit for Self-Driving Cars?*, FORTUNE (Oct. 30, 2014, 7:10 AM), http://fortune.com/2014/10/30/learners-permit-for-self-driving-cars/ [https://perma.cc/2SFH-SU2H] (noting that drivers will be encouraged to "[s]it back, relax, and let software and sensors handle the job").

286. *See* S.B. 995 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)). *But see* NEV. REV. STAT. § 482A.070 (2013) (mandating that: "If an autonomous vehicle is being tested on a highway within this State, a human operator must be . . . [c]apable of taking over immediate manual control of the autonomous vehicle in the event of a failure of the autonomous technology or other emergency").

287. S.B. 995 § 665(2) (codified at MICH. COMP. LAWS ANN. § 257.665(2)).

288. *Id.* § 665(4).

289. *See id.* § 665(5).

290. *See* Funkhouser, *supra* note 7, at 439 (noting the gap in legislation surrounding AVs).

the violation, the culpability and liability must be clear before AVs become a significant part of the automobile market. Otherwise, both manufacturers and consumers will be faced with the possibility of expensive litigation to determine who or what is actually liable for speeding past a stopped emergency vehicle.[291]

Again, if the AV is fully controlling the vehicle, then the law simply should not hold that a human passenger satisfies the *actus reus* of the crime. The human has not acted voluntarily at all.[292] In essence, the technology promises to make the human operator as much at fault in an AV as the back-seat passenger is in the standard automobile.[293] In the standard vehicle, the passengers are not held liable for the acts of the driver, whether that act constitutes failing to obey a police officer,[294] driving drunk,[295] or driving a vehicle unfit for road use.[296] It is solely the driver's responsibility to ensure the safe operation of his vehicle.[297] According to a straight reading of the amended MVC, that "driver" is now the AV.[298] So, just as the passenger in a standard vehicle is not liable for the fault of the standard driver due to his absence of *actus reus*, so too should the human operator of the AV pass culpability to the manufacturer of the AV.[299]

So what should the new legislation be? Updated legislation should hold the manufacturer culpable, and thus financially liable, upon a finding that a failure in hardware or software caused the infraction.[300] For example, if the radar atop the AV failed to see a red light and thus failed to stop, the law should hold the manufacturer or installer of the radar liable. The only element acting in that situation was the radar, and the efficacy of the radar is the responsibility of the manufacturer, just as it would be in a products liability action.[301] Importantly, if the human operator tampers with the equipment, then the AV manufacturer would not be liable. But where the human

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291. *See supra* Section I.B.

292. *See supra* note 269 and accompanying text.

293. A passenger may well be liable for violating other laws, such as failing to wear a seatbelt. *See* MICH. COMP. LAWS. § 257.710e(3), (8) (2016).

294. *Id.* § 257.602a(1).

295. *Id.* § 257.625(2)(a)-(b).

296. *Id.* § 257.683(1).

297. *See id.*

298. S.B. 995 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

299. *See supra* text accompanying note 293.

300. *See supra* Section IV.A.

301. *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (1998).

operator of the AV has not *acted*, and thus has not satisfied the requisite element of the criminal offense, the justice system should not punish him. Doing so would violate the very purpose of the justice system: to punish the malfeasant.[302] By punishing the wrong actor, the system abates no harm and arbitrarily punishes innocent people.[303] Instead, the legislature and courts must recognize the importance of placing liability with the guilty party and should allow for a cause of action against the AV manufacturer.[304] This maintains the purposes of punishment under the general purpose of the criminal law: deterrence of the harm caused by illegal acts.[305]

3. *Intent-Based Crimes: Adding* Mens Rea

Though intent-based *mens rea* crimes are often more difficult to prove, the criminal law for specific-intent crimes is surprisingly well-tailored to a world of AVs.[306] Examples of *mens rea* crimes include willfully disobeying a traffic signal by a police officer and knowingly operating an unsafe vehicle.[307] Intent-based crimes do not require much legislative change because, generally speaking, neither the human operator nor the automated driving system of the AV will satisfy the *mens rea* element of the relevant statute.[308] If the automated driving system is in full control of the vehicle and the vehicle ignores a police officer, then the human operator is simply not guilty; the operator did not willfully ignore the police officer.[309] Even in a standard automobile, the driver would not be found liable without the requisite intent.[310] In the above example, if the driver never saw the police officer, then charging him with "willfully

302. As the Model Penal Code states, one of its purposes is "to subject to public control persons whose conduct indicates that they are disposed to commit crimes." MODEL PENAL CODE § 1.02(1)(b) (AM. LAW INST. 2015).

303. *Id.*

304. *See* DRESSLER, *supra* note 41, at 32-33 (discussing the purpose of punishment as a deterrent).

305. *Id.*

306. This is because the intent element of the crime is likely missing. *See infra* note 312 and accompanying text.

307. *See supra* Section I.C.

308. *See* MICH. COMP. LAWS § 257.602a(1) (2016) (requiring that the operator of a motor vehicle not "willfully" disregard and officer's directions).

309. *See id.*

310. *See id.*

ignoring" the officer would fail. The driver would lack the *mens rea* element for the offense.[311]

Similarly, when the human operator fully relinquishes control to the AV, the willful element will be impossible to prove.[312] If the technology works as promised, then the human operator will in fact do little or nothing "willfully" during the operation of the vehicle.[313] The person seated in the front position may press "go," and the automated, programmed system of the AV will take over all willful operations—if a computer can operate "willfully" at all.[314] But none of those things constitute a willful disobedience of the law. Thus, neither the human operator nor the AV satisfies the elements of the crime because he, she, or it will not have committed an act that meets the requisite *mens rea* standard of willfulness.[315]

On the other hand,[316] one might argue that, according to the promise of the technology, the human operator certainly *intended* to start the vehicle in motion by entering a final destination.[317] In the example of disobeying the signal of the police officer, however, that intent does not satisfy the element of *mens rea.* The intent to move a vehicle is not the intent required. The driver must intend, as a willful act, to disobey the command of an officer.[318] One may intend to drive or operate the AV, but have no intent or *mens rea* whatsoever regarding the command of the officer. If the human operator maintains only intent to move the vehicle without the willful disobedience of the officer, then the statutory elements of the statute

311. The Model Penal Code defines "purposely," which is akin to "willfully," as the perpetrator's "conscious object to engage in conduct of that nature or to cause such a result," with the attendant circumstance satisfied. MODEL PENAL CODE § 2.02(2)(a).

312. There is no willful or purposeful act on the part of the operator. *Id.*

313. *See* WAYMO, *supra* note 5.

314. *Id.*; S.B. 995 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

315. *See supra* note 311 and accompanying text.

316. There are very few published counterarguments to this theory, as there are few published articles on AVs in general. The arguments provided are ones that are reasonably predictable, given the subject matter.

317. *See* WAYMO, *supra* note 5 (explaining the Google self-driving car).

318. *See* MODEL PENAL CODE § 2.02(1) (noting that a perpetrator must act with the requisite *mens rea* "with respect to *each material element* of the offense") (emphasis added). The intent to move the vehicle does not satisfy the material element required in the example, i.e., disobeying the officer.

are not satisfied, and the human operator may not be charged with the crime.[319]

Similarly, the AV software does not willfully disobey the police officer because the software simply responds according to its programming.[320] It is problematic, both practically and philosophically, to say that the machine has a *will* in the same way that a human does.[321] As always, the manufacturer could be held liable for programming the intentional breaking of a traffic law, but that kind of technological crime should be treated similarly to any other technology-based crime.[322] Otherwise, while the AV controls the vehicle, it is likely that the human operator has no intent regarding the movement of the vehicle, except that the vehicle arrives at the destination safely.[323] Likewise, the AV does not have an intent beyond its programming.[324] Assuming no intentional malfeasance in the programming, then, the *mens rea* element of the crime will nearly always be missing, resulting in no sustainable criminal charges.[325]

4. *Negligence, Accident, Intent: When an AV Kills*

As noted above, an AV is not likely to "intentionally" disobey a traffic law. But could an AV intentionally kill someone? Well, that is conceivable, but it would require programming by a human being who intends that result. The consequences of such a nefarious plan are best left to another Article—or perhaps the next *Terminator* movie. Absent a plan to target pedestrians, the same analysis above applies; the AV acts according to its programming, and it therefore would not have the intent to disobey traffic laws. Again, if it does so inadvertently, both the human operator and the AV still lack the requisite *mens rea* to be found guilty of a specific-intent crime.

On the other hand, it is quite conceivable that an AV would *negligently* cause the death of a human being. For a showing of

319. *See* Mich. COMP. LAWS § 257.602a(1) (2016) (requiring that the operator of a motor vehicle not "willfully" disregard the officer's directions).

320. *See* ANDERSON ET AL., *supra* note 6, at xix-xxi (explaining the technology behind AVs).

321. The court could not hold the car liable for the same reasons that the court cannot hold a computer liable for defrauding software manufacturers. *See* THE SOFTWARE ALLIANCE, *supra* note 176.

322. *See supra* note 177 and accompanying text.

323. *See* Chin, *supra* note 9 (explaining the promise of AV technology).

324. *See* ANDERSON ET AL., *supra* note 6, at xix-xxi.

325. *See supra* note 311 and accompanying text.

negligent homicide, the MPC requires only that the actor cause the death of a human being by grossly deviating from the standard of a reasonable person.[326] And, again using Michigan as an example, both Michigan courts and the MVC impose penalties for negligent homicide.[327] In fact, to sustain a charge of negligent homicide in Michigan—or "involuntary manslaughter," as it is known there—the prosecutor need only show either an unlawful act or a negligent act or omission that results in the death of another.[328]

Unfortunately, negligent acts and omissions occur all too often in vehicles. For example, if a driver fails to exercise reasonable care when approaching a crosswalk, it is entirely possible that his or her negligence would result in the death of a pedestrian.[329] Depending on the specific facts, the law could hold the driver responsible for negligent homicide.[330] In Michigan, that means up to fifteen years in prison and up to a $7,500 fine.[331]

But what if the AV is driving? As discussed throughout this Article, the very promise of AVs is that the driver is no longer in control. Imagine pushing "go" on an AV and opening a favorite book, looking up from the page only to see the AV make contact with a pedestrian. What then? *Res ipsa loquitor*? The accident itself *means* that someone was negligent?

The solution to this complex issue must lie in the relationship between the technology and its user, along with who—or what—was actually negligent. First, courts must examine the relationship formed between the consumer and the manufacturer as defined by relevant contracts, promises, marketing, and reasonable expectations. In the *Waymo* vehicle, for example, there is no steering wheel.[332] It would therefore be illogical for Google to claim that the human operator had the responsibility to swerve before hitting the pedestrian; there is no mechanism by which to implement such an avoidance tactic.

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326. MODEL PENAL CODE § 2.02(d).

327. *See supra* Section I.D.

328. People v. Richardson, 293 N.W.2d 332, 336 (Mich. 1980), *modified on other grounds*, People v. Beach, 418 N.W.2d 861, 870 n.9 (Mich. 1988).

329. *See Injury Prevention & Control: Motor Vehicle Safety*, CDC, https://www.cdc.gov/motorvehiclesafety/pedestrian_safety [https://perma.cc/4ZHE-KD27] (last visited February 6, 2017) (noting that 4,735 pedestrians were killed in traffic crashes in the United States in 2013).

330. *See* MODEL PENAL CODE § 2.02(d); MICH. COMP. LAWS ANN. § 750.321.

331. MICH. COMP. LAWS ANN. § 750.321.

332. *See supra* note 5.

Still, the second important consideration is who or what was *actually* negligent. The promise of automation should not make the AV negligent as a matter of law. Courts will need to recognize and develop new standards of care for AV technology, just as they have done for other unforeseen groups, like pilots.[333] As with most liability-based issues, the facts will vary widely in each case. For example, imagine an examination of the AV's programming reveals that the manufacturer rushed to release the AV and failed to appropriately test pedestrian-avoidance features. Notwithstanding all of the hardware and software in the vehicle, the system was simply ill-equipped to recognize a person walking across the street. Of course, this is highly unlikely given the obviousness of the danger. But such a situation *surely* amounts to negligence if the programming failed to reasonably account for pedestrians.

In such a situation, it would violate the very purpose of the criminal law to hold the human operator responsible. Again, besides pushing "go," the human operator has done nothing negligent in the commission of the homicide. In fact, based on the promise of the technology, it is perfectly *reasonable* for the driver to be distracted while in the fully autonomous car. After all, that is the point of the technology. Accordingly, the $7,500 fine should pass to the manufacturer through products culpability. The importance of that concept lies not in holding the AV liable for damages suffered by the human operator,[334] but in *bypassing* the human operator altogether when assessing criminal liability. In other words, the criminal statute that makes the human operator culpable simply would not apply; the human satisfies neither the *actus reus* nor the *mens rea* of the crime. Moreover, the AV itself is acting as the agent of the manufacturer, as described further below.[335]

That said, if the vehicle is not yet fully autonomous, then the driver should not rely on the vehicle to take full control.[336] For example, Tesla has an autopilot mode, but it requires drivers to take control whenever necessary.[337] Failing to take control before a

333. *See* Turner v. United States, 736 F. Supp. 2d 980, 1000 (M.D.N.C. 2010).

334. This issue is best dealt with under the product liability umbrella.

335. *See infra* Subsection IV.D.3.

336. *See supra* note 13.

337. *See* Rachel Abrams and Annalyn Kurtz, *Joshua Brown, Who Died in Self-Driving Accident, Tested Limits of His Tesla* N.Y. TIMES (July 1, 2016), https://www.nytimes.com/2016/07/02/business/joshua-brown-technology-enthusiast-tested-the-limits-of-his-tesla.html?_r=0 [https://perma.cc/86FE-6QQL].

collision has already led to one fatality.[338] If the manufacturer makes it clear that the vehicle is not fully self-driving, then the human operator would continue to be responsible under the traditional framework provided by state vehicle codes.

Finally, but importantly, this Article is not advocating for a sort of "fairness" standard. Products culpability is not premised on the argument that "well, someone must pay, so it should be the big companies." In fact, that would violate the underlying principles of criminal law just as much as holding the innocent human operator responsible. Products culpability suggests holding the manufacturer liable for negligence *only where* the manufacturer actually breached its duty of care. To show negligent homicide, for example, the State still bears the burden of showing that the manufacturer was, in fact, negligent. This may be through an examination of the programming, hardware, or a foreseeable malfunction. But the burden of proof remains with the State, and, as in any criminal case, all parties are innocent until proven guilty beyond a reasonable doubt.[339]

Even in light of this solution, amendments to current criminal laws are necessary. A prosecutor cannot charge a vehicle with manslaughter, and a court cannot sentence a car to fifteen years in prison. Yet, fatal accidents that meet the common-law requirements of manslaughter will still occur.[340] So in this autonomous age, it will be up to legislatures to decide how to hold machines criminally liable in light of practical restrictions on sentencing. And, as always, it will be up to the courts to interpret those newly minted laws.

D. What Would the Courts Say?: Analyzing Case Law

Although courts have analyzed GPS technology,[341] autopilot programming,[342] and corporate criminal liability,[343] none of those

338. *Id.*

339. *See* Taylor v. Kentucky, 436 U.S. 478, 483 (1978) ("The principle that there is a presumption of innocence in favor of the accused is the undoubted law, axiomatic and elementary, and its enforcement lies at the foundation of the administration of our criminal law." (quoting Coffin v. United States, 156 U.S. 432, 453 (1895))).

340. *See* People v. Richardson, 293 N.W.2d 332, 336 (Mich. 1980) (noting that manslaughter requires a showing of a negligent act or omission), *modified on other grounds*, People v. Beach, 418 N.W.2d 861, 870 n.9 (Mich. 1988).

341. *See, e.g.*, Rosenberg v. Harwood, No. 100916536, slip op. at 1 (Utah 3d. Jud. Dist. Ct. May 27, 2011).

342. *See, e.g.*, Glorvigen v. Cirrus Design Corp., 796 N.W.2d 541, 544 (Minn. Ct. App. 2011).

cases provide adequate corollaries to AVs. The very promise of the technology makes a decision for or against liability unprecedented, and the courts will be faced with the task of analogizing or distinguishing prior case law.[344] The general principles do illuminate the way that courts analyze products liability and technology issues,[345] however, and the cases deserve examination.

1. *Distinguishing* Rosenberg

The case of *Rosenberg v. Harwood* provides contrast for the truly unique nature of AVs.[346] Whereas in *Rosenberg* the court said that Google did not "deprive[] the plaintiff of his normal opportunities for protection,"[347] the promise of AVs is to do just that.[348] Unlike GPS technology, which simply adds navigation abilities to the user's life,[349] AVs are meant to assume the normal duty of care that drivers maintain every day.[350] Unlike in *Rosenberg*, where there was no "contractual or fiduciary relationship" that would give rise to Google's duty, such a fiduciary duty is the exact promise that makes AV technology so appealing.[351] AV technology promises that drivers will be able to relax on the way to work while reading a book, watching a movie, or enjoying coffee, all while their AVs avoid obstacles, follow the speed limit and other laws, and maintain safety for the human operator and passengers.[352] By making such

343. *See* State v. Christy Pontiac-GMC, Inc., 354 N.W.2d 17, 19 (Minn. 1984).

344. *See supra* Section II.B.

345. *See generally Rosenberg*, No. 100916536, slip op. at 1; *Glorvigen*, 796 N.W.2d at 548.

346. Even the unique facts in *Rosenberg* fall short of the problems created by AVs. *See Rosenberg*, No. 100916536, slip op. at 2-4 (describing the technological elements of GPS).

347. *Id.* at 3 n.5 (quoting RESTATEMENT (SECOND) OF TORTS § 314A(4) (AM. LAW INST. 1965)).

348. *See generally* Chin, *supra* note 9.

349. *See* Marshall Brain & Tom Harris, *How GPS Receivers Work*, HOWSTUFFWORKS, http://electronics.howstuffworks.com/gadgets/travel/gps.htm [https://perma.cc/L8C6-C8FN] (last visited Dec. 27, 2016).

350. *See generally* Chris Urmson, *The View from the Front Seat of the Google Self-Driving Car*, Backchannel (May 11, 2015), https://backchannel.com/the-view-from-the-front-seat-of-the-google-self-driving-car-46fc9f3e6088#.gz59efm3p [https://perma.cc/DQK7-9XWE].

351. *Rosenberg*, No. 100916536, slip op. at 3.

352. *See* Del-Colle, *supra* note 10 (describing riding in an AV and automatically following the traffic laws).

representations, AV manufacturers are guaranteeing to perform for AV owners the basic safety and legal functions that drivers guarantee for themselves every day.[353] In so guaranteeing, manufacturers are creating a nearly fiduciary relationship with the driver that far exceeds the relationship that humans have with other products; much like a doctor or a lawyer, the AV promises to keep the human operator safe and to follow the law while doing so.[354]

In creating this nearly fiduciary duty, then, manufacturers of AV technology are liable for the civil *and* criminal harm that arises from the use of their products. No other technology purports to follow the law *as the principal actor* in the same way that the AV does. In fact, even when a product, such as the radar scanner, promises to enable the driver to follow the law in a vaguely similar way, that product offers to pay the criminal fines imposed due to the failure of the product.[355] The case of the AV thus forms the precise case that satisfies the elements missing in the *Rosenberg* case: the AV removes from the driver the duty of self-protection, promises a fiduciary or caretaker role, and promises to keep the driver safe. Unlike the GPS technology in *Rosenberg*, which the court found owed none of those caretaker duties,[356] the AV manufacturers explicitly promise this kind of safety and voluntarily undertake a nearly fiduciary role.[357] With such a broad undertaking of safety for the driver, the duty of care denied to the plaintiff in *Rosenberg* surely applies to manufactures of AVs through their marketed promises.[358] The unique technology requires the new, unique products culpability cause of action.[359]

2. *Cars on Autopilot: Analogizing* Glorvigen v. Cirrus Design Corporation

Though the *Glorvigen* case deals with products liability, it provides a valuable standard by which courts evaluate the duty of

353. *Id.*

354. *Id.* (describing the ability of AVs to take control of driving).

355. *See* K40 ELECTRONICS, *supra* note 179.

356. *Rosenberg*, No. 100916536, slip op. at 3.

357. *See* ANDERSON ET AL., *supra* note 6, at 3 (describing the fullest level of automation).

358. With such an advanced level of automation, the driver gives full control to the AV, thus trusting it for safety and to effectively abide by the law. *See id.*

359. *See supra* Section IV.A.

manufacturers to purchasers of automated equipment.[360] The court extended the standard provided by the Restatement (Second) to hold a manufacturer liable if the manufacturer: (1) knows that the supplied-for use is dangerous; (2) reasonably thinks that the user will not realize its dangerous potential; and (3) does not exercise reasonable care to warn the user.[361] Though the danger inherent in autopilot technology differs from AV technology,[362] AVs maintain their own danger—they may break the law without warning.[363] Presumably, though, the promise of AV technology, indeed the very crux of the marketing, lies in a safer experience.[364] So, if Google or Audi knows that the car may break the law through malfunction, yet fails to warn the consumer, then the court should hold the manufacturer to the same standard that applies in products liability actions.[365] Though typical products liability issues certainly exist for AVs,[366] the more complicated problem surrounds monetary damages, or damages arising from civil and criminal liability under the relevant vehicle code.[367] As opposed to *Glorvigen*, where the court found no duty to train consumers, courts *should* recognize a basic duty for car manufacturers to either accept liability for intent-based and strict-liability crimes or to lose the option to advertise vehicles that "drive themselves."[368] With the manufacturer's sales-pitch promise of safety and better driving must come liability for a failure to keep that promise; thus, the court should adopt the doctrine of products culpability against vehicles promising safe automation.[369]

3. *The Corporate Agency Doctrine Remains Relevant*

Even if the courts choose to adopt the products culpability doctrine, they may still seek to apply some of the agency doctrine

360. *See* Glorvigen v. Cirrus Design Corp., 796 N.W.2d 541, 550 (Minn. Ct. App. 2011).

361. *Id.*

362. The inherent danger with autopilot technology lies in flying; AVs will not (for now) leave the ground.

363. *See* Del-Colle, *supra* note 10 (acknowledging that the technology will never be flawless).

364. *See* Muller, *supra* note 127.

365. *See supra* notes 158 and 361 and accompanying text.

366. *See* Funkhouser, *supra* note 7, at 452-58.

367. *See supra* Part I.

368. *See* WAYMO, *supra* note 5 (advertising the "self-driving car").

369. *See supra* Section IV.A.

usually associated with corporate criminal liability.[370] In the *Christy* case, the court found that a corporation could be found criminally liable for the acts of its agents because of its status as a legal person.[371] Though the court there was interested only in theft and fraud,[372] the general rules should be applied to corporate technology giants as well.[373] The court did not focus on the nature of the corporation or the nature of the fraud, but rather on the nature of the relationship between the criminally liable agent and the corporation.[374] That is, if the agent acts in such a way that he or she acts in place of the corporation, then that criminal liability is imputed to the corporation.[375] Of course, there will likely be no Google, Tesla, or BMW employee sitting in the passenger seat of a consumer AV.[376]

Could the car itself be the agent of the manufacturer corporation, though?[377] If the promise of AV technology relies upon full control of the vehicle by the vehicle itself, then perhaps Google would be promising that the car, as an agent of the corporation, remains fully in charge of the driving experience.[378] Though the Restatement of Agency notes that computers are simply instrumentalities of corporations or other entities, it limits the point by saying that "[a]t present," computers are not agents.[379] But under the driver-less system promised by Google,[380] the car seems to be exactly that. And under Michigan's new law, it is even clearer. The automated driving system *is* the driver or operator.[381] That fact alone makes the agency theory a solid foundation on which to build a case of products culpability. If the automated driving system is the driver of the AV, and the system was designed and implemented by the manufacturer corporation, then the system is driving *as an agent* of the manufacturer corporation.

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370. *See supra* note 197 and accompanying text.

371. State v. Christy Pontiac-GMC, Inc., 354 N.W.2d 17, 19 (Minn. 1984).

372. *See supra* note 206 and accompanying text.

373. *See About Google*, GOOGLE, https://www.google.com/intl/en/about [https://perma.cc/R2BJ-8J8B] (last visited Dec. 27, 2016).

374. *See supra* note 205 and accompanying text.

375. *See id.*

376. *See* Franzen, *supra* note 123.

377. *See supra* Part III.B-C.

378. *See* WAYMO, *supra* note 5.

379. *See* RESTATEMENT (THIRD) OF AGENCY § 1.01 cmt. e (AM. LAW INST. 2006).

380. *See* WAYMO, *supra* note 5.

381. S.B. 995 § 665(5), 98th Leg., Reg. Sess. (Mich. 2016) (codified at MICH. COMP. LAWS ANN. § 257.665(5) (West 2016)).

Put another way, imagine visiting the Google headquarters for an important meeting. An employee standing near the door offers to valet-park visitors' vehicles. According to the Restatement, that employee falls directly within the definition of "agent" for Google.[382] The employee-valet is an individual acting on behalf of a principal corporation, Google, Inc., who may incur legal rights and obligations on behalf of the company.[383] The legal right is to act on behalf of Google to park visitors' cars, and the obligation is to park them safely and effectively.

If the agent were to wreck the vehicle, go joyriding on the highway, or incur any other moving infraction, the liability would certainly rest with the driver and, according to the principles of *Christy*,[384] with Google as the principal.[385] That same agent responsibility, it seems, forms the promise of AV technology.[386] Cars can already park themselves,[387] and fully automated AVs would be able to drop off the human operator–passenger at the door, park itself, and then pick up the human operator–passenger on command.[388] This virtual valet maintains nearly the exact same relationships between the manufacturer, the AV, and the human operator–passenger as the human valet at the door of Google's headquarters.[389] In a standard automobile, the driver hands the valet his keys; in an AV, the human operator presses "go" on the AVs control panel. The valet then parks the car; or, the software engages and parks the car instead.

There is no appreciable difference between AV technology and classic agency. Though the software does not form a natural person,

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382. *See* RESTATEMENT (THIRD) OF AGENCY §§ 1.01, 1.04(5).

383. *See id.* §§ 1.01, 1.04(5).

384. It is again worth noting that *Christy* established a limited decision, applicable only to Minnesota. *See* State v. Christy Pontiac-GMC, Inc., 354 N.W.2d 17, 17, 19 (Minn. 1984). The principles, however, are consistent: agents may impute criminal liability to their principal corporations. This is the concept of respondeat superior applied in another, logical context. *See* RESTATEMENT (THIRD) OF AGENCY § 2.04.

385. *Id.* §§ 1.01, 1.04, 2.04 (establishing the agency relationship and tort liability).

386. *See* Del-Colle, *supra* note 10 (describing riding in an AV and automatically following the traffic laws).

387. *See, e.g.*, *Active Park Assist*, FORD, http://owner.ford.com/how-tos/vehicle-features/convenience-and-comfort/active-park-assist.html [https://perma.cc/2SL7-T89B] (last visited Dec. 27, 2016).

388. *See* Chin, *supra* note 9 (describing the potential of AV technology).

389. *See id.*

neither does the corporation.[390] Where the company essentially promises to replace the driver with a fully automated system, it ought to be held to an agency culpability standard—a standard that would be best implemented by instituting the products culpability cause of action.[391]

E. AVs as Chattel

While many commentators recognize the complexities of such agency, technology, and corporate culpability, others view the issue from a different perspective.[392] At least two scholars have advocated for treating AVs similarly to canines, where the owner is responsible for the autonomous chattel.[393] Essentially, both dogs and cars act under the control of their human owners. The two chattels, however, are quite different. First, the sellers of AVs market the vehicles by promising that they are autonomous, self-driving, and safe.[394] No canine vendor makes a similar claim; there is no promise that the dog will keep itself on a leash or teach itself not to bite others.[395] With this disparity in promised outcomes, a canine never reaches the same duty of care guaranteed by AVs, and thus provides a poor analogy.[396]

The promise of AV technology seems to be that the technology *is* going to save the driver from him or herself.[397] If the AV were a dog, it would never make a mess. In fact, it might help clean them

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390. *See* RESTATEMENT (THIRD) OF AGENCY § 1.04(5) (AM. LAW INST. 2006) (defining "person" to include individuals as well as organizations).

391. *See* State v. Christy Pontiac-GMC, Inc., 354 N.W.2d 17, 19-20 (Minn. 1984) (discussing general principles governing agency culpability for corporations).

392. *See, e.g.*, Gurney, *supra* note 11, at 251-52 (focusing on how tort liability applies to accidents involving autonomous vehicles).

393. *See* Duffy & Hopkins, *supra* note 12, at 456.

394. *See, e.g.*, WAYMO, *supra* note 5.

395. *See, e.g.*, *General Dog Care*, ASPCA, https://www.aspca.org/pet-care/dog-care/general-dog-care [https://perma.cc/7BJR-Q3GM] (last visited Dec. 27, 2016). Nothing provided by the ASPCA indicates that dogs are self-caring or self-trained; to the contrary, the effort put into caring for and training them is quite extensive.

396. *See* discussion *supra* Subsection II.B.2.

397. *See* Bianca Bosker, *No One Understands the Scariest, Most Dangerous Part of a Self-Driving Car: Us*, HUFFINGTON POST (Sept. 16, 2013, 8:29 AM), http://www.huffingtonpost.com/2013/09/16/self-driving-car_n_3909069.html [https://perma.cc/PFA8-PLE8] (quoting a Stanford professor as saying, "[p]eople worry about the wrong thing when it comes to the safety of autonomous cars . . . There are going to be times where the driver has to take over. And that turns out to be by far the most dangerous and totally understudied issue").

up. Under the promise of AVs, crash rates are meant to decrease as driver inattention becomes less dangerous.[398] With all of this being the case, there is simply no precedent for answering complicated legal questions, and treating the AV like simple chattel does not resolve the issues of intent, agency, and corporate promises noted above.[399] One struggles to think of any other technology that promises to operate an element of a human's life *more* safely than does the human. No dog pound promises the buyer that the dog will do human things *better* than the human does, only to later be sued for failing to properly train the dog to be human.[400] Yet, this is the world that AV companies promise—and the lawsuits are sure to follow.

CONCLUSION

With the promise of AV technology comes a litany of new legal questions.[401] Because no other product promises to obey the law in the same way as the AV, no other product has created the same legal issues.[402] Most importantly, no other technology exists that can break the law without the input of the human operator, and AVs have the potential to do just that.[403]

As noted above, in analyzing the problems associated with AVs, adaptive cruise control often comes to mind.[404] The technology purports to accelerate and decelerate with the traffic in which the vehicle is currently situated.[405] As the car in front of the principal car speeds up, the principal car speeds up, and the opposite occurs when the vehicle in front slows down.[406] As of right now, though, the criminal aspect of the technology is not an issue.[407] The technology could cause the vehicle to go above the speed limit, but the human

398. *See* Muller, *supra* note 127.

399. *See* discussion *supra* Subsection IV.D.3.

400. This thought experiment, of course, is ridiculous; no canine can perform the majority of human functions. It is meant to indicate the complication of such a new and promising technology, particularly in contrast to simpler autonomous chattel, like an animal.

401. *See* Funkhouser, *supra* note 7, at 440 (discussing AV products liability).

402. *Id.* at 451 (noting that the legal course for AVs is not clear).

403. *See* ANDERSON ET AL., *supra* note 6, at 3 (describing Level 4 AV technology).

404. *See generally* Nice, *supra* note 107 (describing adaptive cruise control).

405. *Id.*

406. *Id.*

407. *See supra* Section II.B.

driver is still in full control of the vehicle.[408] That is, the human driver sets the speed in the first place. If that speed exceeds the posted limit, then the human driver is responsible for the resulting legal consequence. The human has relinquished some control for the sake of convenience but has, in no sense, become less responsible for operating the vehicle.[409]

This is not the case with AV technology.[410] AVs promise to take full control of the vehicle, and, with that full control, the manufacturers of the technology must take responsibility for the actions of the vehicle.[411] States like Michigan have made incredible strides to accommodate AVs. But that legislation has not answered all of the questions that AVs pose, and states will need new legislation as technology evolves. With this in mind, new laws should allow for a products culpability cause of action, limiting the liability of the human operator according to the type of infraction—whether that be a civil infraction, a strict liability crime, or an intent-based crime.[412] With this system in place, the fleet of vehicles on the road, along with the laws that govern them, will undergo a radical, beneficial change.[413]

408. *See* Nice, *supra* note 107.

409. *Id.*

410. *See supra* Part II (describing current AV law and its inadequacy for criminal violations).

411. *See* Del-Colle, *supra* note 10 (describing riding in an AV and automatically following the traffic laws).

412. *See supra* Section IV.C.

413. *See generally* Chin, *supra* note 9 (envisioning the potential of AVs).