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Open Source Download Mishaps and Product Liability: Who is to Blame and What are the Remedies?

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OPEN SOURCE DOWNLOAD MISHAPS AND PRODUCT LIABILITY: WHO IS TO BLAME AND WHAT ARE THE REMEDIES?

I. INTRODUCTION

Product liability for manufacturers and other sellers has long been established as a strict liability tort broken down into distinct categories of design and manufacturing defects.[1] Negligence actions supplement strict product liability and provide injured parties a potential remedy.[2] However, new technologies and their place in the legal system raise new issues that ordinary product liability and negligence rules and doctrines have not contemplated, let alone ruled upon.[3] In particular, new technologies that result in personal injury and property damage raise new questions, and how they fit within the law must be examined.

One such technology is known as "Additive Manufacturing" or "Three-Dimensional Printing" ("3D"). A quick internet search of 3D-printing likely leads to descriptions such as "'a process of making a three-dimensional solid object', 'additive process, where successive layers of material are laid down,'" and subsequent descriptions that provide little excitement or insight to the lay reader.[4] In reality, 3D-printing and the products produced by the technology are beginning a revolution in manufacturing where the global market is predicted to grow from $2.5 billion in 2013 to $16.2 billion in 2018, a compound annual growth rate ("CAGR") of 45.7%.[5] A wide range of applications include medical printers capable of printing tooth and bone replacements, models of Lego pieces printed for children, 3D printed guns and rifles, and fully operational miniature airplanes.[6] Further, the U.S. Navy is

1. CHARLES J. NAGY, JR., AMERICAN LAW OF PRODUCTS LIABILITY § 1:1 (3d. ed. 2015).

2. NAGY, JR., *supra* note 1.

3. *See* Lyria Bennett Moses, Comment, *Why Have a Theory of Law and Technological Change?*, 8 MINN. J.L. SCI. & TECH. 589, 590 (2007).

4. Nick Entin, *3D Printing: An Open Source Revolution for Hardware?*, POLARION SOFTWARE WHITE PAPERS 2 (Oct. 18, 2015, 12:18 PM), https://www.polarion.com/resources/download/3d-printing-open-source-revolution-hardware-ebook.

5. *See 3D printing market to grow to US $16.2 billion in 2018*, CANALYS (March 31, 2014), https://canalys.com/newsroom/3d-printing-market-grow-us162-billion-2018.

6. Entin, *supra* note 4 (citing Mark Raby, *3D Printed Aircraft Successfully Takes Flights*, news release, (Oct. 23, 2012, 5:26 PM), http://www.geek.com/news/3d-printed-aircraft-success fully-takes-flight-1523821).

installing 3D-printers on ships instead of stocking pre-made replacement parts.[7] Shoe manufactures, Adidas and Nike, have announced new rapid prototyping initiatives with 3D-printers.[8] And researchers are beginning to explore food-printing projects.[9] Taking this process a step further, 3D-printers are beginning to expand beyond manufactures and their experimentation labs, and into the homes of countless enthusiasts around the world.[10]

A Forbes study, conducted in March of 2014, showed that one in three Americans was ready and willing to purchase a 3D-printer for home use.[11] With 3D-printers on the cusp of reaching so many homes, the next question becomes: Where are these home users ("hobbyists") acquiring the programs for the items they are printing? It is true some hobbyists may purchase programs from large corporate manufactures or boutique engineering firms who design programs for home users. Should personal injury or property damage result from defects in those design programs and resulting products, parties will likely be covered under strict liability law, with the designers accepting liability for their defective products.[12] Thousands of people will download their program, print their product, and unfortunately suffer injuries from faulty designs and/or improper use of their home machines.[13] With this scenario likely playing out across the United States, particularly as 3D-printers become more readily available and well known, the legal effect must be examined and the question must be asked, "who is liable?" In such a case, the Restatement (Third) of Torts clearly states that "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."[14] The less clear issue, and the focus of this comment, are products and programs built and designed by hobbyists who make their products and programs available through open source download.[15] These designers likely have no insurance and are not in the business of selling their designs. Instead,

7. Entin, *supra* note 4.

8. Entin, *supra* note 4.

9. *See* Melissa Gray, *NASA funds 3D food printer, pizza is the first item on the menu*, ENGADGET (May 21, 2013), http://www.engadget.com/2013/05/21/nasa-funds-3d-food-printer/.

10. *See* TJ McCue, *3D Printing in the Home: 1 in 3 Americans Ready for 3D Printer*, FORBES (March 19, 2014, 7:24 PM), http://www.forbes.com/sites/tjmccue/2014/03/19/3d-printing-in-the-home-1-in-3-americans-ready-for-3d-printer/.

11. McCue, *supra* note 10.

12. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998).

13. *See* Allison Harris, *The Effects of In-Home 3D Printing on Product Liability Law*, 6 JOURNAL OF SCI. POLICY & GOVERNANCE (2015), http://www.sciencepolicyjournal.org/uploads/5/4/3/4/5434385/harris_new_ta1_1.2.2015_lb_mg.pdf.

14. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998).

15. Harris, *supra* note 13. In such a case, the tortfeasor is much less clear and is unlikely to qualify as a "seller" as defined in the Restatement. *See* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998).

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they simply enjoy designing items in their free time and wish to share a few free ideas with fellow 3D-printer enthusiasts.[16] Unfortunately, personal injury and property damage could result from their initially harmless action. Some potential injurious scenarios include defectively designed CAD files leading to malfunctioning products that cause injury, enthusiasts improper use of their home machine causing a defect in the printed item, defective 3D-printing machines that produce a defective item that results in an injurious situation despite a competent user and sound design, or any combination of these or other unforeseen situations.

Where 3D-printers are sold and used by large corporate manufactures using the technology for prototyping and product design, strict liability for defective design and manufacturing neatly applies under the Third Restatement of Torts Liability "Commercial Seller or Distributor for Harm Caused by Defective Products" doctrine[17] in addition to potential negligence actions for negligent manufacturing, negligent design and/or negligent failure to warn.[18] The programs are designed by company engineers, built with company 3D-printers, and are subject to quality control measures taken by corporate manufactures.[19] In that case, 3D-printers present little, if any, legal issues that have not been long established.[20] However, in the case of hobbyists who are mere occasional sellers, strict liability is unlikely to apply where it is clear that the rationale for imposition of strict liability is served only if the defendant is "in the business" of releasing products into the stream of commerce.[21] The Restatement Third of Torts defines one who sells or distributes as:

16. *See* David Bahn & Dan Dressel, *Liability and Control Risks with Open Source Software*, INFORMATION TECH.: RESEARCH AND EDUC. (last visited Oct. 25, 2015), http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.467.436&rep=rep1&type=pdf.

17. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998).

18. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998). A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings.

19. Harris, *supra* note 13.

20. *See* Escola v. Coca Cola Bottling Co. of Fresno, 150 P.2d 436, 440–41 (Cal. 1944). In his 1944 concurrence, Justice Traynor introduces the idea of strict liability. *See id.* Nineteen years later the precedent established in *Escola* is further cemented in *Greenman v. Yuba Power Products, Inc.* when Justice Traynor stated, "We need not recanvass the reasons for imposing strict liability on the manufacturer. They have been fully articulated in the cases cited." Greenman v. Yuba Power Products, Inc., 59 Cal.2d 57, 63 (1963).

21. *See* Galindo v. Precision Am. Corp., 754 F.2d 1212, 1217 (5th Cir. 1985) (finding that "in the business of selling" applies to any person engaged in the business of selling products for use or consumption. Strict liability therefore applies to any manufacturer of such a product, to any wholesale or retail dealer or distributor, and to the operator of a restaurant). There are two principal reasons for imposing strict products liability on those in the business of selling. The first is that those who sell products in the normal course of business, "by reason of their continuing relationships with manufacturers, are most often in a position to exert pressure for the improved safety of products and can recover increased costs within their commercial dealings, or through

> One sells a product when, in a commercial context, one transfers ownership thereto either for use or consumption or for resale leading to ultimate use or consumption. Commercial product sellers include, but are not limited to, manufacturers, wholesalers, and retailers. Further, one otherwise distributes a product when, in a commercial transaction other than a sale, one provides the product to another either for use or consumption or as a preliminary step leading to ultimate use or consumption. Commercial nonsale product distributors include, but are not limited to, lessors, bailors, and those who provide products to others as a means of promoting either the use or consumption of such products or some other commercial activity.[22]

Because of this longstanding precedent and Restatement definition,[23] strict liability will not apply unless the law is expanded. Without this expansion, negligence actions appear to be the only available remedy for parties involved in incidents resulting from hobbyist-designed products.[24] Although, a remedy in personal injury claims may be attained under negligence actions, an issue arises here where the true tortfeasor is unclear in the cases described above.[25]

This Comment examines the unclear issue of who is liable when a 3D-printer is purchased by a hobbyist, a product is downloaded and printed from an open-source website, and the printed product causes personal, financial, and/or property damage to one or more parties because somewhere along the line, a defect occurred. Part II offers a brief history and technological overview of how 3D-printing works. Part III offers an in-depth injurious scenario and explains why negligence actions, reviewed under a case-by-case basis, offer the best remedy for those harmed by defective 3D-printed products. Part IV

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contribution or indemnification in litigation." Sukljian v. Charles Ross & Son Co., 69 N.Y.2d 89, 95 (1986). The second is that those who market products as a regular part of their businesses "may be said to have assumed a special responsibility to the public, which has come to expect them to stand behind their goods." *Id.* While the reasons behind the ordinary seller rule and occasional seller exception are clear, where to draw the line between ordinary and occasional sellers is not. Jaramillo v. Weyerhaeuser Co., 536 F.3d 140, 146 (2d Cir. 2008).

22. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

23. *See Escola*, 150 P.2d at 440–41; *see also Galindo*, 754 F.2d at 1217; RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

24. *See* Price v. Shell Oil Co. 2 Cal.3d 245, 254 (1970). Restatement Third of Torts states rule of strict liability "applies to any person engaged in the business of selling products for use or consumption." RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 1 (1998). It therefore applies to any manufacturer of such a product, to any wholesale or retail dealer or distributor, and to the operator of a restaurant. *Price*, 2 Cal.3d at 254. It is not necessary that the seller be engaged solely in the business of selling such products. *Id.* The rule does not, however, apply to the occasional seller of food or other such products who is not engaged in that activity as a part of his business. *Id.* While the California Court diverged from the Second Restatement as to some aspects of strict liability, it expressed agreement in its holding that strict liability does not apply to isolated transactions, but rather to sellers "found to be in the business of manufacturing or retailing." *Id.*

25. *See* Harris, *supra* note 13.

examines why strict product liability is inapplicable to our hobbyist 3D-printer users. Lastly, Part V illustrates why strong regulation and expansion of strict liability is unnecessary where courts are already in a position to grant sufficient remedies.

II. THE HISTORY OF 3D PRINTING AND HOW IT WORKS

The earliest 3D-printing technologies first became visible in the late 1980's, at which time they were called Rapid Prototyping ("RP") technologies.[26] The origins of 3D-printing can be traced back to 1986 when the first patent was issued for a stereolithography apparatus ("SLA"), invented by Charles Hull in 1983.[27] While stereolithography can claim to be the first past the starting post, it was not the only rapid prototyping technology in development at this time. In 1987, Carl Deckard, who was working at the University of Texas, filed a patent for his Selective Laser Sintering ("SLS") rapid prototyping process.[28] Only a few years later, in 1989, Scott Crump filed a patent for Fused Deposition Modeling ("FDM").[29] Throughout the 1990's and early 2000's a host of new technologies continued to be introduced, still focused wholly on industrial applications.[30] On the heels of this industrial expansion, 3D-printer manufacturers began developing user-friendly, cost-effective systems, which were the prelude to the desktop printers used by hobbyists today.[31] In 2009, the first commercially available 3D-printer was offered for sale, the BfB RapMan 3D-printer, closely followed by Makerbot Industries in April of the same year.[32] Today, this market has expanded even further and is estimated to reach $16.2 billion by 2018.[33]

The starting point for any 3D-printing process is a 3D digital model, which can be created using a variety of 3D software programs, in the industry known as 3D Computer Aided Design ("CAD").[34] The model is then 'sliced' into layers, thereby converting the design into a file readable by the 3D-printer.[35] The material processed by the 3D-printer is then layered according to the CAD file and an item is built "slice by slice" or "layer by layer."[36] With a wide

26. *The Beginner's Guide to 3D Printing*, 3D PRINTING INDUSTRY 11 (last visited November 12, 2015, 9:30 PM) http://3dprintingindustry.com/3d-printing-basics-free-beginners-guide/.

27. *The Beginner's Guide to 3D Printing*, *supra* note 26.

28. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 12.

29. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 12.

30. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 13–14.

31. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 15–16.

32. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 17.

33. CANALYS, *supra* note 5.

34. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 20.

35. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 20.

36. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 20.

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range of processes, like those mentioned above, a variety of materials can be used to build the items, including plastics, metals, ceramics and sand.[37] The most basic limitation of 3D-printing, in terms of materials and applications, is that there is no "one solution fits all."[38] For example, some 3D-printers process powdered materials (nylon, plastic, ceramic, metal), which utilize a light/heat source to sinter/melt/fuse layers of the powder together in the defined shape.[39] While others process polymer resin materials before solidifying the resin materials into ultra thin layers.[40]

Perhaps the most common and easily recognized process is deposition, and this is the process employed by the majority of entry-level 3D printers.[41] This process extrudes plastics, commonly polylactic acid ("PLA") or acrylonitrile butadiene styrene ("ABS"), in filament form through a heated extruder to form layers to create the predetermined shape.[42]

Parts can be printed directly, and it is possible to produce very detailed and intricate objects, often with functionality built in, thereby eliminating the need for assembly.[43] However, excluding the complexity of designing the CAD, file-preparation and its conversion to printable software can also prove time-consuming and complicated, particularly for parts that demand intricate support material during the build process.[44] Furthermore, once off the printer, many parts will need to undergo finishing operations.[45] The removal of support material is obviously necessary for products that use it during the printing stage, while other finishing operations might include sanding, lacquer, paint or

37. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 20.
38. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 21.
39. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 21.
40. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 21.
41. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 21.
42. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 21–22.
43. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 22.
44. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 22. Support structures were early solutions to problems stemming from gravity. These are rigid pieces of base material erected in a lattice next to the object being printed (kind of like a scaffold paces the construction of a wall). Support structures do a good job of holding everything in place. However, they can be difficult to remove. After the part is printed, one must break away these supports, and aggressive sanding may be required to remove small marks left on the object." Michael Armbruster, *3D Printing: Understanding Support Material*, PDDNET (July 18, 2012, 11:42 AM), http://www.pddnet.com/blog/2012/07/3d-printing-understanding-support-material. Other technologies, like Fused Deposition Modeling, have introduced a support material that dissolves when placed in a bath of chemicals while powder-based technologies, like Selective Laser Sintering, can often use the surrounding powder itself to hold everything in place and after printing, one can lift the object from the powder and simply pour the excess back into the machine. *Id.*
45. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 23.

other types of traditional finishing touches, which all typically need to be done by hand and require skill, time, and patience.[46]

As so much goes into the creation of a functional 3D-printed product or program, there is ample opportunity for mistakes to occur that could lead to catastrophic results.

III. AN ILLUSTRATIVE INJURIOUS SCENARIO

Before we examine the law of product liability, imagine this situation: Jerry is a 3D-printer enthusiast, he has a degree in Ceramics Engineering and has worked in the beverage container packaging industry for over 30 years. Spurred from his love of package design, he recently tried his hand at designing simple household items on his home CAD software. To his surprise, Jerry found the simple car gas-cap he designed, after the one originally on his car broke, was the perfect replacement part. Not only did he get great joy from designing and printing a useful part, the plastic gas-cap fit perfectly and served as a great replacement. Impressed with himself and his design, he hands out a number of home printed gas-caps to his neighbors for use on their own cars, should they need it.

Bill, Jerry's neighbor, receives one of Jerry's gas-caps and is thoroughly impressed. Being an accountant, Bill has no training, financial interest, or career goals of selling 3D-printed items or any type of design or engineering. However, as a 3D-printer enthusiast himself, Bill decides to try his hand at reverse engineering Jerry's gas-cap and uploads the resulting CAD file on multiple open forum 3D-printing websites for others to use, modify, and/or download and print for themselves.[47] Bill's file is perfect but in his excitement, he does not include any build specifications or build materials.

A few months later, Dorothy, another 3D-printer enthusiast, stumbles across Bill's gas-cap design and downloads it to print and use after her own car's original gas-cap breaks. Excitedly, Dorothy does some quick measurements, determines Bill's design is a good fit, and begins the printing process on her home 3D-printer. Just a few hours later, Dorothy mounts her newly printed gas-cap onto her car and heads to the gas station for a fill-up. Unfortunately, Dorothy purchased her Direct Metal Printing (DMP) 3D-printer to assist with her metal sculpting business and her metal gas-cap accidently causes a spark when she tries to screw it back on after her fill-up. The spark ignites the fumes escaping from the open gas tank and sets the entire care ablaze. Dorothy suffers serious burns on her torso, legs, and arms and the gas

46. *The Beginner's Guide to 3D Printing*, *supra* note 26, at 23.

47. *See generally* Fabian, *Top 25: Most Popular 3D Modeling & Design Software for 3D Printing*, I.MATERIALISE, (Aug. 5, 2015), https://i.materialise.com/blog/top-25-most-popular-3d-modeling-design-software-for-3d-printing (outlining a few of the numerous websites and 3D-printing programs and forums available to upload/download CAD files for home printing).

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station is severally damaged from the explosion. After the accident, it is determined the spark occurred when a piece of support material, intended to be broken off during finishing,[48] struck the side of Dorothy's car. The switch to metal caused the support material to adhere to the finished part, ultimately proving detrimental.

Although fictitious, the above scenario could play out across the United States as the availability of 3D-printers and the number of hobbyist users increase.[49] Where Dorothy has suffered substantial physical injuries and the gas station has considerable financial and property damage, identifying who is liable is a question that must be examined. Five potential parties could arguably be held responsible, namely: (1) Jerry, the first designer of the gas-cap, (2) Bill, the hobbyist who reverse engineered Jerry's cap and distributed the CAD file downloaded and used by Dorothy, (3) the Open-Source website used to "distribute" Bill's CAD file, (4) the manufacturer of the DMP 3D-printer used by Dorothy to make the gas-cap, or (5) Dorothy, who may be responsible for the property damage and potentially contributorily negligent for her own injuries.

A. Negligence As The Answer

The Restatement (Third) of Torts states, "a person acts negligently if the person does not exercise reasonable care under all the circumstances. Primary factors to consider in ascertaining whether the person's conduct lacks reasonable care are the foreseeable likelihood that the person's conduct will result in harm, the foreseeable severity of any harm that may ensue, and the burden of precautions to eliminate or reduce the risk of harm."[50] Historically, recovery in product liability cases with a negligence action requires a plaintiff to prove that they were injured (1) by a defect in the product, (2) the product was defective when it left the hands of the defendant, and (3) the defect in the product was due to the negligence of the defendant.[51] However, strict liability causes of action only require the first two elements for recovery.[52] Further, the elements of a negligence claim under the Restatement (Third) of Torts include

48. Armbruster, *supra* note 44. As discussed in Section II, 3D-printers "slice" a CAD file into multiple layers and print "layer by layer." Therefore, as the build progresses, parts become vertically taller and more susceptible to toppling over or crumbling from increased weight. To combat this effect, support material is added in strategic places that prevent the printed item from failing over or into undercuts or hollow spaces. After the item is printed, a technician then removes that support material and the finished product remains as originally designed.

49. *See* McCue, *supra* note 10.

50. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 3 (2010).

51. Jiminez v. Sears, Roebuck & Co., 482 P.2d 681, 683 (1971).

52. *Id.*

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(1) a duty, (2) failure to exercise reasonable care (breach of duty), (3) factual cause, (4) physical harm, and (5) harm within the scope of liability.[53]

With the negligence standard established for defective products, we first examine the original creator Jerry. In the present case, Jerry is unlikely to be held liable where he is not the cause of physical harm, nor acted negligently as required by the Restatement.[54] The Restatement sets out that "an actor whose negligence is a factual cause of physical harm is subject to liability for any such harm within the scope of liability, unless the court determines that the ordinary duty of reasonable care is inapplicable."[55] Given the Restatement definition and the facts illustrated in our hypothetical, it would appear there is nothing Jerry did or failed to do in designing and printing his gas-cap that could be said to be "a failure to exercise reasonable care," and thus no negligence allegations against him are likely to succeed. Further, Jerry is so far removed from the actual incident that he is unlikely to be held liable for Dorothy's or the gas station's injuries where he poses no duty to those injured parties.[56] This determination is separate from the scope of liability issue, which is generally an issue of fact for the fact-finder to resolve.[57] Instead, duty is a

53. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM, *supra* note 50, § 6 cmt. b (2010). "The first element [of a negligence claim], 'duty,' is a question of law for the court to determine, although the court's decision about duty might require the jury to resolve predicate factual disputes upon which a determination of duty rests. Ordinarily, an actor whose conduct creates risks of physical harm to others has a duty to exercise reasonable care. Except in unusual categories of cases in which courts have developed no-duty rules, an actor's duty to exercise reasonable care does not require attention from the court. The remaining four elements are ones of fact for a prima facie claim for negligently causing physical harm." *Id.*

54. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 6 (2010).

55. *Id.*

56. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 29 (2010). "Duty is usefully employed when a court seeks to make a telling pronouncement about when actors may or, on the other hand, may not be held liable. Thus, the liability of social hosts for providing alcohol to their guests is best treated as a duty issue, rather than as a matter of scope of liability. On the other hand, when the limits imposed require careful attention to the specific facts of a case, and difficult, often amorphous evaluative judgments for which modest differences in the factual circumstances may change the outcome, scope of liability is a more flexible and preferable device for placing limits on liability." *Id.* at cmt. f. Here, Jerry's actions are not negligent and analysis would not reach this point, but even if they were, a duty argument may arise discussing whether the original enthusiast designer is liable when their product is reverse engineered by a subsequent party before being distributed.

57. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 29 cmt. f (2010). "Duty is a question of law for the court, while scope of liability, although very much an evaluative matter, is treated as a question of fact for the factfinder. Hence, duty is a preferable means for addressing limits on liability when those limitations are clear, when they are based on relatively bright lines, when they are of general application, when they do not usually require resort to disputed facts in a case, when they implicate policy concerns that apply to a class of cases that may not be fully appreciated by a jury deciding a specific case, and when they are employed in cases in which early resolution of liability is particularly desirable." *Id.*

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matter of law determined by the court.[58] Whether the court would agree that Jerry possesses no duty or if other facts would indicate he failed to act reasonably is unclear, but recognizing negligence actions as the appropriate remedy permits the court to make such a determination without unnecessarily expanding strict liability law.

As we move along, Bill's conduct could arguably be considered unreasonable and he may be found within the scope of liability. The Third Restatement establishes a duty exists whenever an actor's conduct "creates a risk of physical harm," without regard to whether the injury or harm that occurred was foreseeable.[59] As is the case here, the creation of a product inherently creates a risk of harm and Bill likely has a subsequent duty to Dorothy and others who may download his CAD file. Where scope of liability, duty, and physical harm exist, all that remains is determining whether or not Bill was negligent and whether that negligent conduct was the factual cause of damage.[60]

Given our illustrative facts, Bill may have been negligent in the design of his CAD file,[61] negligent distribution of said file, and/or negligent failure to warn where he did not provide any specific warnings or specifications for material or build requirements.[62] Foreseeable risk is an element in the courts negligence determination where the fact-finder assesses the foreseeable risk at the time of the defendant's alleged negligent conduct.[63] The extent of foreseeable risk depends on the specific facts of the case and cannot be usefully assessed for a category of cases; small changes in the facts may make

58. *Id.*

59. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 7 (2010).

60. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 6 (2010).

61. Under a theory of negligence, Bill could have acted unreasonably in the creation of his gap-cap file where he has no prior training or skill in computer aided design. Where the custom of the 3D-printing community may be hobbyist's possessing some "special skill," a design Bill makes could be seen as a departure from that communal view and his actions increase the risk of a defective product reaching others, and therefore Bill's conduct was unreasonable. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 13 (2010). Further, although the fact that a person is below average in judgment, knowledge, or skills is generally ignored in considering whether the person is negligent, a jury could conclude that the Bill's conduct lacks reasonable care because he lacks necessary skill and therefore may be found negligent even when in originally deciding to engage in his conduct, sincerely believed that his conduct was reasonable. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 12 (2010).

62. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 3 (2010). An actor's conduct creates a risk of physical or emotional harm can fail to exercise reasonable care by failing to warn of the danger if: (1) the defendant knows or has reason to know: (a) of that risk; and (b) that those encountering the risk will be unaware of it; and (2) a warning might be effective in reducing the risk of harm.

63. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 7 cmt. j (2010).

a dramatic change in how much risk is foreseeable.[64] Here, Bill's first action of creating his gas-cap CAD file is unlikely to be considered unreasonable. Although a departure from community standards can be considered negligent conduct,[65] the 3D-printing community is made up of individuals from all walks of life and Bill's nontechnical background does not appear to be a departure from communal norms. Further, the fact that Bill may be below average in judgment, knowledge, or skills is not a sign of negligence in and of itself,[66] and although the jury could find he acted without reasonable care by simply creating the CAD file, it appears unlikely.

Second, Bill's act of distributing his file would not be considered unreasonable. As he is one of countless enthusiasts across the US, the sharing of his particular CAD file would likely fall within the customs of the 3D-printing community.[67] Where this is within the custom, the sharing alone is not evidence that Bill's conduct is negligent, although it does not preclude a finding of negligence.[68]

Where finding Bill acted negligently appears difficult, his failure to include particular build specifications may be seen as unreasonable. The Restatement spells out that an actor's departure from the custom of the community, or of others in like circumstances, in a way that increases risk is evidence of the actor's negligence but does not require a finding of negligence.[69] The creation of a 3D printable program includes build and material specifications[70] and Bill's failure to include that necessary information is outside customary practice. While proof of deviation from custom is only evidence of negligence, this evidence often has significant weight[71] and is the most likely avenue for imposing liability on Bill. Thus, courts should leave such determinations to juries unless no reasonable person could differ on the matter.[72] As described, the court is more than capable of determining whether or not Bill is negligent and therefore expansion of strict liability is still unnecessary.

Having explored potential causes of action against the "enthusiasts," Dorothy and/or the gas station may still bring negligence actions against the open source website and/or the DMP machine manufacturer. Unfortunately for Dorothy and the gas station, proving either party is liable appears difficult. As seen with potential negligence actions against Jerry, there must first be some type of alleged tortious conduct where an actor fails to maintain a reasonably

64. *Id.*
65. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 13 (2010).
66. *Id.*
67. *Id.*
68. *Id.*
69. *Id.*
70. *See infra* note 136.
71. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 13 cmt. c (2010).
72. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 7 cmt. i (2010).

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necessary level of care.[73] Considering the facts here, it would appear neither the open source website nor the DMP machine manufacturer failed to uphold a necessary level of care.[74] Where there are no acts of negligence, their claims will likely fail.

Following a negligence determination, the court conducts a factual cause determination by applying the Restatement's "but-for standard" for determining cause in fact.[75] Section 26 states that "[c]onduct is a factual cause of harm when the harm would not have occurred absent the conduct."[76] An actor's tortious conduct need only be a factual cause of the other's harm.[77] The existence of other causes of the harm does not affect whether specified tortious conduct was a necessary condition for the harm to occur.[78] As is the case here, multiple causal sets may exist, one or the other of which was the cause of harm.[79] If sufficient evidence to support each causal set is introduced, the fact-finder will have to determine which one is better supported by the evidence.[80] On the other hand, if the evidence revealed each cause set could interact and cause the injury, then both causal sets may be a factual cause (both elements of the causal set) of the plaintiff's injury.[81] Here again, the court is in a position to make determinations where multiple causal sets exist, therefore negligence actions appear to be a less evasive means for distributing liability than expanding strict liability doctrine.

As the Restatement and its comments illustrate, the question of negligence is one for the fact-finder,[82] thus, negligence should be determined by the factfinder for all of the parties in our hypothetical. Although it is unclear whether or not our parties or other parties in similar cases will be held liable, the fact remains courts are already in a position to distribute liability without any expansion of product liability law under negligence theories. Therefore, determining liability with already established negligence actions appears to be the best alternative to the non-obvious tortfeasor dilemma where the courts are already in a position to try these cases and determine where the true fault lies.

73. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 3 (2010).

74. If the facts are altered and it is alleged either the DMP machine manufacturer or the open source website were negligent, Dorothy would have the previously discussed claims available to her. Where this is the case, the fact remains courts are in a position to allocate damages when parties involved act without a reasonably necessary level of care. *See* RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 26 cmt. c (2010).

75. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 26 (2010).

76. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 26 cmt. c (2010).

77. *Id.*

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.*

82. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 26 cmt. c (2010).

B. Remembering Comparative Negligence

If negligence is accepted, it must also be noted that the theory of contributory negligence will also apply, putting great pressure on the injured party. Today two types of comparative negligence reign supreme, namely "pure" and "modified." Under a pure negligence approach, plaintiffs can only recover proportional to the amount their negligence contributed to the injury.[83] Under the modified approach, a number of variations exist including the "fifty percent rule", the "forty-nine percent rule", and the "slight/gross rule."[84] The fifty percent rule allows a plaintiff to recover if his or her negligence was not greater than fifty percent of the plaintiff's and defendant's negligence combined.[85] Similarly, the forty-nine percent rule, prohibits recovery if the plaintiff was more than forty-nine percent negligent.[86] Under the slight/gross rule, a plaintiff can only recover if he or she is slightly negligent, or if the defendant is grossly negligent relative to plaintiff's negligence.[87]

Applying comparative negligence to our hypothetical, it is likely that Dorothy was just as negligent as Bill, or any of the other parties, for using the improper build material and failing to knock off that support material which had fused to the gas-cap and thereby causing the critical spark.[88] As discussed above, the jury will make this determination and is more than capable of properly distributing liability.[89]

Thus, courts are prepared to hear personal injury and property damage cases involving 3D-printing enthusiasts. Allowing negligence causes of action to provide remedies to potential plaintiffs promotes safe use and greater

83. *See* Scott v. Rizzo, 634 P.2d 1234 (N.M. 1981).

84. Jennifer J. Karangelen, *The Road to Judicial Abolishment of Contributory Negligence Has Been Paved by* Bozman v. Bozman, 34 U. BALT. L. REV. 265, 270 (2004).

85. Karangelen, *supra* note 84.

86. Karangelen, *supra* note 84, at 270–71.

87. Karangelen, *supra* note 84, at 271.

88. Determining whether or not Dorothy's failure to use the proper build material and failure to knock off the support material would be determined under the "Learned Hand" test, presented in United States v. Carroll Towing Co., 159 F.2d 169 (2d. Cir. 1947). There Judge Learned Hand described negligence in "algebraic terms" where an actors conduct is negligent if the burden of taking adequate precautions against an accident was less than the probability of injury without taking those precautions. *Id.* at 173. Here, the jury would likely find Dorothy was negligent given the low burden of using the proper material but arguments could be made for either side. The point remains the plaintiff's conduct is equally important as the defendants' conduct.

89. RESTATEMENT (THIRD) OF TORTS: PHYS. & EMOT. HARM § 3 cmt. b (2010). "The definition of negligence, defined in section three of the restatement, applies whether the issue is the negligence of the defendant or the contributory negligence of the plaintiff. There are, however, certain differences in emphasis between negligence and contributory negligence. A defendant is held liable for negligent conduct primarily because that conduct creates a risk of harm to a third party; the plaintiff's contributory negligence serves as at least a partial affirmative defense primarily because it exposes the plaintiff to a risk of harm." *Id.*

innovation of 3D-printing technologies by our hobbyists without unnecessary expansion of other areas of the law.

IV. STRICT LIABILITY

Where negligence actions may not succeed, strict liability for defective products doctrine offers another potential remedy. In the hypothetical above, five parties could be liable and it is beneficial to further examine them under a theory of strict product liability where negligence may fall short at providing a remedy.

A. The Original CAD Designers

When Jerry and Bill's backgrounds are ignored, they may potentially be held strictly liable as a true seller or other distributor of products under strict liability theories.[90] Both could be found to have put products into the stream of commerce in their ordinary course of business[91] and customary seller analysis clearly puts liability for defective products on their shoulders, assuming Jerry's gas-cap and Bills CAD file were in some way defective.[92] Product liability doctrine establishes strict liability for sellers under the theory that those who put items into commerce assume a special responsibility to the public, which has come to expect them to stand behind their goods."[93] Further, the policy behind product liability attempts to put liability on those in a position to exert pressure for the improved safety of products and those capable of bearing the increased costs for safety advancements.[94] Where it would be simple to hold Jerry, Bill, or any other similarly acting party liable for products they put into the stream of commerce, such an imposition of liability does not promote putting liability on those most capable of bearing it and is outside the

90. *See* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

91. *Id.* The restatement defines "sellers" as, one who distributes a product when, in a commercial transaction other than a sale, one provides the product to another either for use or consumption or as a preliminary step leading to ultimate use or consumption. *Id.* As later analysis will show, Bill and Jerry do not fall within this category as they are not involved in a commercial transaction, but under a textual analysis, it could be argued the act of handing out their gas-cap and/or CAD file beings them down a path towards strict liability as a "distributor."

92. *See id.*

93. *Id*. Those who sell products in the normal course of business, "by reason of their continuing relationships with manufacturers, are most often in a position to exert pressure for the improved safety of products and can recover increased costs within their commercial dealings, or through contribution or indemnification in litigation." Sukljian v. Charles Ross & Son Co., 69 N.Y.2d 89, 95 (1986). Second, those who market products as a regular part of their businesses "may be said to have assumed a special responsibility to the public, which has come to expect them to stand behind their goods." *Id.*

94. *Sukljian*, 69 N.Y.2d at 95.

Restatement's definition.[95] Therefore, because neither Jerry nor Bill are "in the business of selling," the traditional strict liability product defect theory is inapplicable.[96] Instead, liability for Jerry and Bill may only be reached through alternate means that courts have not yet clearly defined, unless negligence actions are found appropriate or the law is expanded.

In addition, strict liability may be even harder to establish in Bill's case where computer programs have not been cemented as a "product."[97] Currently, the Restatement provides that "(a) A product is tangible personal property distributed commercially for use or consumption. Other items, such as real property and electricity, are products when the context of their distribution and use is sufficiently analogous to the distribution and use of tangible personal property that it is appropriate to apply the rules stated in this Restatement. (b) Services, even when provided commercially, are not products. (c) Human blood and human tissue, even when provided commercially, are not subject to the rules of this Restatement."[98] Under the common definition of product, computer programs are still undefined, but courts may draw an analogy between the treatment of software under the Uniform Commercial Code ("U.C.C.") and under products liability law when determining the extension of strict liability.[99] Under the U.C.C., software that is mass-marketed is considered a good,[100] but software that was developed specifically for the

95. *See id.* at 95–96.

96. *See id.*

97. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 19 cmt. d (1998). "The Ninth Circuit suggested in dictum that computer software might be considered a product for purposes of strict products liability in tort. Winter v. G.P. Putnam's Sons, 938 F.2d 1033, 1035 (9th Cir.1991) (applying California law). Although there are no cases on point on their facts, numerous commentators have discussed the issue and urged that software should be treated as a product. *See, e.g.*, Gemignani, Comment, *Product Liability and Software*, 8 RUTGERS COMPUT. & TECH. L.J. 173, 196-99 (1981) (arguing that the same policies that gave rise to strict liability apply as well to software); Note, *Strict Products Liability and Computer Software: Caveat Vendor*, 4 COMPUT. L.J. 373 (1983) (predicting that mass-marketed, off-the-shelf software will be subject to strict products liability); Jim Prince, Note, *Negligence: Liability for Defective Software*, 33 OKLA. L. REV. 848, 855 (1980) ("In terms of software, [analysis of public policy considerations] . . . means that when software is distributed to the public through mass merchandising, strict liability in tort should be an available theory for a consumer who is injured because of a defect in the software." *Id.*); Susan Lanoue, Note, *Computer Software and Strict Products Liability*, 20 SAN DIEGO L. REV. 439 (1983) (arguing that strict products liability should be extended to the computer industry); see also Daniel J. Hanson, Note, *Easing Plaintiffs' Burden of Proving Negligence for Computer Malfunction*, 69 IOWA L. REV. 241 (1983)."

98. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 19 (1998).

99. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 19 cmt. d (1998).

100. *See, e.g.*, Sys. Design and Mgmt. Info., Inc. v. Kansas City Post Office Emp. Credit Union, et al., 788 P.2d 878 (Kan. Ct. App. 1990); Advent Sys. Ltd. v. Unisys Corp., 925 F.2d 670 (3d Cir. 1991) (applying Pennsylvania law); RRX Indus., Inc. v. Lab-Con, Inc., 772 F.2d 543 (9th Cir. 1985) (applying California law).

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customer is a service.[101] Here, it is unclear if Bill's CAD program will classify as a product and thus strict liability will be even more difficult to apply in similar cases.

B. The "Distributor"

Although open source websites that provide 3D-printable files have only tangentially been discussed in the realm of legal theories,[102] open source downloads have been generally analyzed in view of copyright,[103] free software,[104] and other content.[105]

The open source movement is believed to have begun after computer programmers began sharing free information with other computer users.[106] These programmers were motivated to share this "free" information with large groups of fellow programmers and thereby allow multiple people to change, improve and reproduce different variations of the same source program.[107] In the same way, open source websites have exploded in the world of 3D-printers and millions of CAD files are now available to 3D-printing enthusiasts, with countless variations.[108]

Moving down the stream, liability should be examined for the website responsible for distributing Bill's gas-cap CAD file. Where Jerry and Bill failed to meet the "in the business" requirement of product liability torts,[109] a program distribution website would fit neatly within such a category.[110] These

101. *See, e.g.*, Data Processing Servs., Inc. v. L.H. Smith Oil Corp., 492 N.E.2d 314 (Ind. Ct. App. 1986); Micro-Managers, Inc. v. Gregory, 434 N.W.2d 97 (Wis. Ct. App. 1988); *see also* Bonna Lynn Horovitz, Note, *Computer Software as a Good Under the Uniform Commercial Code: Taking a Byte Out of the Intangibility Myth*, 65 B.U. L. REV. 129 (1985); Edward G. Durney, Comment, *The Warranty of Merchantability and Computer Software Contracts: A Square Peg Won't Fit in a Round Hole*, 59 WASH. L. REV. 511 (1984).

102. As of this writing.

103. *See* Christopher S. Brown, Comment, *Copyleft, The Disguised Copyright: Why Legislative Copyright Reform is Superior to Copyleft Licenses*, 78 UMKC L. REV. 749 (2010).

104. *See* Nicholas D. Wells, Note, *Government Use of Free Software*, 33 PUB. CONT. L.J. 565 (2004).

105. *See generally* Brown, *supra* note 103; *see also* Wells, *supra* note 104.

106. Brown, *supra* note 103, at 759 (citing ERIC S. RAYMOND, THE CATHEDRAL & THE BAZAAR: MUSINGS ON LINUX AND OPEN SOURCE BY AN ACCIDENTAL REVOLUTIONARY 10–11, 67 (Tim O'Reilly ed.,1999)).

107. *See generally* Brown, *supra* note 103, at 759. The term "free" refers to not only the zero cost transactions but also the freedom of programmers to edit the programs themselves. *Id.*

108. *See generally* Fabian, *supra* note 47 (outlining a few of the numerous websites and 3D-printing programs and forums available to upload/download CAD files for home printing).

109. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

110. *Id.* Part (b) of the Restatement definition describes a "distributor" as "one who distributes a product when, in a commercial transaction other than a sale, one provides the product to another either for use or consumption or as a preliminary step leading to ultimate use or consumption." *Id.* at § 20(b).

websites are designed and operated to specifically "put CAD files into the stream of commerce" and without question provide products[111] to another for use or as a preliminary step leading to ultimate use.[112] Although the files are typically "free,"[113] a sale is not necessary for the application of strict liability, instead strict liability will apply so long as the party introduces the product into the stream of commerce, such as the distributor in our hypothetical who is not actually selling the files but merely freely distributing them.[114] Further, examining the imposition of liability with policy in mind, large-scale websites are arguably more prepared to finance both litigation and improved safety measures for product liability cases.[115]

In the hypothetical case described, the CAD file distribution website Dorothy downloaded the gas-cap file from is neither a true seller nor manufacturer but instead, as previously discussed, a distributor.[116] But it must be noted that the website itself did not upload the CAD file, instead they simply offered a medium for others to "distribute" their own files.[117] Under strict product liability doctrine, "failure to warn" appears to be the most likely avenue for imposing liability on the open source website who took no part in the design or manufacturing of the injurious product.[118] However, holding this

111. *See* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 19 (1998). Although it is less clear if Bill's CAD file and subsequent distribution qualify as a product as discussed above, the website itself would likely be considered a distributor of products as their files are "mass-marketed" as described in the U.C.C. and potentially adopted in tort law. *See also, e.g.*, *Sys. Design*, 788 P.2d 878; *Advent Sys. Ltd.*, 925 F.2d 670 (applying Pennsylvania law); *RRX Indus., Inc.*, 772 F.2d 543 (applying California law).

112. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

113. Brown, *supra* note 103, at 759. "Free" is not always used to denote price but rather indicates that the user is free to "share, study and modify" the software.

114. *See* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998); *see also* Link v. Sun Oil Co., 312 N.E.2d 126, 130 (Ind. Ct. App. 1974) (finding that "sell" is merely descriptive, and in reality all parties that put goods into commerce, whether they are being sold or not, qualify under this part of the 402(a) test).

115. *Sukljian*, 69 N.Y.2d at 95.

116. *Id.*

117. In this case, Bill uploaded his CAD file to the website on one end and Dorothy downloaded that file on the other. Further muddying the waters of whether or not the website itself was the actual distributor when they acted as an avenue to connect two of our hobbyists.

118. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998). "A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings. . . (c) is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the instructions or warnings renders the product not reasonably safe." *Id.* In this case, the open source website was not involved in the design or manufacturing and holding them liable for failing to warn appears unlikely.

"medium" liable would prove extremely difficult where the anonymity alone presents massive hurdles, let alone foreign venues and other potential problems.[119] Even where those preliminary obstacles are overcome, applying tort liability requires the plaintiff to first establish the website even has a duty of care.[120]

As seen during the development of product liability law, it is necessary to establish some responsibility between defendant and plaintiff.[121] Although strict liability replaced the privity requirement,[122] strictly liable manufacturers still have an obvious connection to the plaintiff(s) injured by their defective product, being that there is no dispute the liable manufacturer made the defective product in question. Here, that connection does not exist where the website made neither the CAD program nor the defective gas-cap that ultimately caused the personal injury, property, and financial damage. Even if a connection is found, the nature of the defect is key. Unless the website was responsible for corrupting the originally uploaded file or otherwise compromising the future injurious product, linking a defect to them appears challenging.

Lastly, tasking websites with quality control of CAD files and the subsequent finished 3D-printed products is simply impractical.[123] Such an imposition would go against a reasonable standard of care where the website operator likely has no more experience than our fictional characters.[124]

Where it is unclear whether or not the open source website owe any duty, courts may examine them in view of the Communications Decency Act which

119. Jay C. Carle & Henry H. Perritt Jr., *Civil Liability on the Internet*, GPSOLO MAGAZINE (Jan./Feb. 2006), http://www.americanbar.org/newsletter/publications/gp_solo_magazine_home/gp_solo_magazine_index/civilliability.html. Because of the anonymity that the Internet offers and the difficulty of identifying the primary wrongdoer, the vast majority of consumers do not even file claims for their injuries or losses and pursuing the primary cyber-tortfeasor is rarely a realistic option, given that much of the wrongdoing originates in a foreign venue. *Id.*

120. Carle & Perritt Jr., *supra* note 119.

121. *See* Greenman v. Yuba Power Products, Inc., 59 Cal.2d 57, 63 (1963) (recognition that liability is not assumed by agreement but imposed by law).

122. *See* Henningsen v. Bloomfield Motors, Inc., 161 A.2d 69, 81 (N.J. 1960). Although *Henningsen* set the precedent, other cases have offered a better understanding for the immateriality of privity for warranty. In *Greenman*, the court found that "although in these [privity cases] strict liability has usually been based on the theory of an express or implied warranty running from the manufacturer to the plaintiff, the abandonment of the requirement between them, the recognition that the liability is not assumed by agreement but imposed by law, and the refusal to permit the manufacturer to define the scope of its own responsibility for defective products make clear that the liability is not one governed by the law of contract warranties but by the law of strict liability in tort." *Greenman*, 59 Cal. 2d at 63.

123. *See generally* Jes Alexander, *Anatomy of a Data Breach – What Cyber Policies Should Cover*, 13 J. TEX. INS. L. 5 (2015).

124. Carle & Perritt Jr., *supra* note 119.

insulates "providers of an interactive computer service from being treated as the publisher or speaker of any information provided by another information content provider."[125] As of this writing, this act has only been explored under First Amendment related immunities,[126] but the reach of the cyber world could potentially extend such an act to cover tort liability as well. Another potential analogous situation to our open source website is illustrated in section 14 of the Restatement (Third) of Torts which states, "one engaged in the business of selling or otherwise distributing products who sells or distributes *as its own* a product manufactured by another is subject to the same liability as though the seller or distributor were the product's manufacturer."[127] This definition applies even if the seller discloses that an identified manufacturer produced the product specifically for the seller.[128] In this circumstance, the seller is presumed to cause the product to be used or consumed, in part at least, in reliance on the seller and the seller's reputation is an implied assurance of the quality of the product.[129] However, in this case the open source website is likely beyond the scope of this rule where they are not distributing the CAD files as "their own," but instead acting as a medium of exchange for another distributor, in our case Bill. Because of this disconnect, to reach liability on section 14 grounds, the law will likely need clarification and/or expansion.

Therefore, although the open source website has the most likely chance of being strictly liable so far, such an imposition would require an expansion or

125. 47 U.S.C. § 230(c) (1998). As of this writing, no case law or precedent was found that deals with this statute in relation to personal injury claims but multiple courts have found the statute does protect from other tort liability. *See* Saponaro v. Grindr, LLC, 93 F. Supp. 3d 319 (D.N.J. 2015) (internet service provider was statutorily immune from liability in tort, pursuant to Communications Decency Act, for its alleged negligence in failing to monitor social networking site and allowing minor child to access site to arrange sexual encounter; provider merely provided neutral tools to carry out what may have been unlawful or illicit conduct); Prickett v. InfoUSA, Inc., 561 F. Supp. 2d 646 (E.D. Tex. 2006) (owner of a website which published plaintiffs' names, addresses and telephone numbers under the heading "Entertainers—Adult" was not an information content provider, and thus, was protected under the Communications Decency Act from liability on plaintiffs' tort claims for, inter alia, defamation and invasion of privacy); Jones v. Dirty World Entm't Recordings, LLC, 755 F.3d 398 (6th Cir. 2014) (operators of user-generated, online tabloid did not develop allegedly defamatory statements concerning cheerleader for professional football team and her relationship with a player, and thus operators were not information content providers as to them, within the meaning of the Communications Decency Act (CDA), and thus operators had immunity under the CDA from the cheerleader's defamation and related tort claims); Johnson v. Arden, 614 F.3d 785 (8th Cir. 2010) (internet service provider (ISP) was immune, pursuant to the Communications Decency Act (CDA), from state tort claims by cat breeders for allegedly defamatory statements posted to website).

126. *See id.*

127. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 14 (1998) (*emphasis added).*

128. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 14 cmt. c (1998).

129. *Id.*

clarification of the law that is unnecessary where negligence actions are already in place.

C. The DMP Machine-Manufacturer

Moving onto a genuine manufacturer, liability could rest with the DMP machine-manufacturer whose machine created the defective gas-cap. Applying standard strict liability analysis, this manufacturer is without question a seller and owes a duty of care to our injured parties.[130] The DMP machine-manufacturer sells this machine in their normal course of business, is often in a position to exert pressure for the improved safety of products, and can recover increased costs within their commercial dealings, or through contribution or indemnification in litigation.[131] Second, they market the DPM machine as a regular part of their business and may be said to have assumed a special responsibility to the public, which has come to expect them to stand behind their goods.[132] However, the DMP machine-manufacturer has not made a defective product, the injury-causing gas-cap was not in their line of products, nor did they have an opportunity or duty to inspect the quality of the doomed gas-cap; therefore, holding them strictly liable is unlikely[133] unless their "failure to warn" is the basis for strict liability imposition.[134] Although such a theory is plausible, imposing strict liability will face the same challenges seen when brought against the open source website.[135] It is true that the DMP machine manufacturer holds significantly more expertise in the realm of 3D-printing and are in a better position to spot potential defects in CAD files, specifications, and/or use of certain build materials. But the fact remains that they are unaware of the CAD file being used by the DMP machine user until after an accident occurs. Further, "Direct Metal Printing" machine-manufactures expressly specify that "metal" is to be used as a build material for their machines.[136] Therefore, a failure to warn claim is unlikely to succeed where Dorothy followed the warnings but was independently negligent when she used an improper CAD file and/or when she failed to knock of the excess support material.

130. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

131. *See* Sukljian v. Charles Ross & Son Co., 69 N.Y.2d 89, 95 (1986).

132. *Id.*

133. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2 (1998). A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings.

134. *Id.*

135. *See* discussion *supra* Section IV(B).

136. *See DMLS Materials*, GPIPROTOTYPE.com, http://gpiprototype.com/dmls-materials.html (last visited Feb. 14, 2016).

In this case, the only way the DMP machine-manufacturer would be held liable is if injury was a result of a defect in their machine.[137] Imposing liability on product manufacturers that have not produced a defective product and are only tangentially associated with the injuries is outside the scope of the Restatement and would set a dangerous precedent where any sufficiently well-heeled corporate defendant would have to pay plaintiffs in other areas of tort law as well.[138] Applying strict liability in such a case likens to holding an oven manufacturer liable for the death of a purchaser who bakes and eats poison mushrooms. Thus, the DMP machine-manufacturer is unlikely to face strict liability where they did not create a defective product nor fail to warn their users of potential injurious situations.

D. The Injured Hobbyist

In our case, three hobbyists' comingling of ideas lead to a catastrophic result, due in large part to the negligence of the injured party herself. Her mistake, and potentially the mistake of thousands of people in the future,[139] was a simple lack of knowledge and understanding of the technology they were using. Therefore, the most prudent answer to these potential problems is a case-by-case negligence analysis where those who failed to exercise due care are held responsible. Here, the negligence analysis begins with the hobbyists.

V. EXPANSION OF STRICT LIABILITY LAW

Even where negligence actions provide potential remedies for parties injured by defective 3D-printed items, some call for heavy regulation and increased strict liability impositions,[140] along with new legal standards such as expanding the seller definition or introducing new strict liability categories like micro-sellers.[141] Nicole Berkowitz proposes an expansion to the strict liability seller definition to include "micro-sellers," which she describes as those who are beyond the mere occasional seller[142] but not yet at the level of an ordinary

137. Determining whether or not manufacturers are liable for design defects involves a balancing of the likelihood of harm to be expected from a [product] with a given design and the gravity of harm if it happens against the burden of the precaution which would be effective to avoid the harm. Pike v. Frank G. Hough Co., 2 Cal. 3d 465, 470 (1970).

138. John G. Culhane, *Real and Imagined Effects of Statutes Restricting the Liability of Nonmanufacturing Sellers of Defective Products*, 95 DICK. L. REV. 287, 293 (1991).

139. Although this hypothetical is simply a fictional story, if 3D-printing trends increase as predicted, a similar occurrence is almost certain to play out.

140. Carle & Perritt Jr., *supra* note 119.

141. Nicole D. Berkowitz, Comment, *Strict Liability for Individuals? The Impact of 3-D Printing on Products Liability Law*, 92 WASH. U.L. REV. 1019, 1049 (2015).

142. Berkowitz, *supra* note 141 at 1028, 1049. Berkowitz defines "occasional sellers" as those "whose sale of a product is wholly incidental to the seller's regular business." Occasional sellers have not been clearly defined by the Courts but were discussed in *Jaramillo* in the context

seller.[143] Ms. Berkowitz recognizes that her micro-sellers are not in the best position to spread or absorb losses and therefore proposes this category as an affirmative defense to strict liability.[144]

Although such an expansion of the law may insulate unclear sellers from strict liability,[145] the court is already in a position to settle these matters without the expansion and imposition of strict liability in the first place. Keep in mind, the Court's rationale tells us strict liability for defective products is imposed on sellers for two reasons: first, because those who sell products in the normal course of business, "by reason of their continuing relationships with manufacturers, are most often in a position to exert pressure for the improved safety of products and can recover increased costs within their commercial dealings, or through contribution or indemnification in litigation;"[146] and second, because those who market products as a regular part of their businesses "may be said to have assumed a special responsibility to the public, which has come to expect them to stand behind their goods."[147] Expanding the seller category to include a new class of micro-sellers is not in line with the goal of strict product liability and unnecessarily increases a party's burden of proof where these micro-sellers have no power to compel meaningful change.

Further, the micro-seller fairness analysis specifically tests the "seller's experience in manufacturing, selling, or designing products along with the scale of the seller's business in units and dollars"[148] which, as we saw in the above example, is likely limited at most. Most hobbyists have little to no formal training nor make their CAD programs available for purchase as a form of income.[149] Instead, they are simply passionate about 3D-printing and want to share their ideas, for free, with others.[150] In the cases where these hobbyists evolve into a true business, large or small, strict product liability should and likely will apply, as they are then ordinary sellers.[151] Therefore, the law should not expand strict liability to include our common hobbyists as they do not remotely qualify as a seller, are unable to promote increased safety measures as

of the reasons behind the ordinary seller rule and how the line between ordinary and occasional sellers is not clear. *Jaramillo*, 536 F.3d at 146.

143. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998). Although the parties being discussed "transfers ownership of products either for use or consumption or for resale leading to ultimate use or consumption," they lack the necessary "commerce" requirement given these parties are not selling or distributing their product in a traditional sense.

144. Berkowitz, *supra* note 141, at 1028, 1049.

145. Berkowitz, *supra* note 141, at 1028.

146. Sukljian v. Charles Ross & Son Co., 69 N.Y.2d 89, 95 (1986).

147. *Id.*

148. Berkowitz, *supra* note 141.

149. Harris, *supra* note 13.

150. Harris, *supra* note 13.

151. RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 20 (1998).

intended by strict liability law, but are still kept in check under traditional negligence doctrine.

VI. CONCLUSION

3D-printing is an exciting technology that is experiencing rapid growth. Unfortunately, this growth brings with it injuries and accidents where liability must be determined. In cases where hobbyist 3D-printer users do not qualify as an ordinary seller, strict liability is inapplicable. Although some may argue heavy regulation and banning of open source content is the answer, this will only dampen the growth of the 3D-printing industry and the potential that it has. Therefore, simple case-by-case negligence actions appear to be the most beneficial and appropriate way to deal with these cases, where the courts determine liability without unnecessarily imposing the burden of an expanded strict liability doctrine.

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