The Autonomy of Technology: Do courts control technology or do they just legitimize its social acceptance?

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Introduction

Concern over the social and environmental effects of technology in the 1960s and 1970s led some lawyers to inquire into the role of law as a social institution in controlling technology. Professor Laurence Tribe wrote an early book reviewing the ways in which the law can be used to influence the development and deployment of technology. He suggested that the "wise control of technology" was of paramount concern in order to protect "the fabric of life and the dignity of man" and that the law could play a part in this wise control (Tribe, 1973, p.i).

"The law" is an imprecise label for a diverse group of social control mechanisms, and various legal actors and processes affect the development and use of technologies. Looking first at legal actors, the legislature creates statutes to encourage technological development and deployment (e.g. through intellectual property protection or tax incentives), as well as to regulate specific technologies thought to pose actual or potential risks. Government agencies are given statutory authority to review and approve technologies such as new drugs, pesticides or genetically modified crops before they can be marketed. The courts hear disputes arising under the statutes or as a result of the agency decisions mentioned above. In addition, in common law jurisdictions, the courts also play an important role in developing legal principles that can affect the development and use of novel technologies. For example, the law of tort deals with private claims brought by one party against another for the intentional or careless infliction of harm. Where these harms involve technologies, the courts' judgments of whether or not to award compensation or issue injunctions will affect the use of these technologies.

Tribe suggests a tripartite division of legal processes or methods that can influence technology (Tribe, 1973, p.52-53). First, a legal actor may issue specific directives with respect to whether and how certain steps should be taken in developing or using a technology. Second, a legal actor may modify the market within which decisions about technologies are taken (e.g. by creating property rights, providing rights to compensation for damages caused by a technology, or subsidizing certain developments). Third, a legal actor may change the structure of decision-making about technology by altering the "composition, powers, or obligations of those organizations which make the basic decisions with respect to an area of technological development or application" (Tribe, 1973, p.52).

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Over the past few decades, legal scholars have debated the relative merits of the various legal institutions and actors in regulating technologies (e.g. Tribe, 1972-1973; Furrow, 1982-1983; Huber, 1985; Goldberg, 1986-1987; Wessell, 1989; Green, 1990; Gillette and Krier, 1990; Shuck, 1993; Cross, 1994; Bennett Moses, 2005). Some argue that legal institutions must adopt structures to minimize the influence of faulty public perceptions of risk and to maximize regulation based on scientific data (Cross, 1994). Running contrary to this view, others cite the calls of scientists for political and legal decision-makers to exert some sort of social control over technology rather than abdicating responsibility to scientists (Green, 1990, p.383). However, the response from lawyers has in general been relatively haphazard and unsystematic. Although the following comment was written in 1990, it holds true today, another seventeen years later.

> "It is remarkable that the legal profession has not raised or responded to the question of how society can best bring about timely and effective control over new technologies. A quarter of a century after the question was first raised by scientists and engineers, legal scholars still have contributed very little to its answer." (Green, 1990, p.383)

There are various reasons why legal institutions may offer poor mechanisms for the social control of technology. Legal institutions are more likely to react to problems than to foresee and attempt to forestall problems. Legislators may be unwilling to legislate with respect to hypothetical problems, preferring to avoid the risks of premature regulation (Green, 1990, p.385). By the time problems become obvious, a range of vested interests may be aligned in favour of the technology (Tribe, 1973). Similarly, courts are fairly reluctant to make rulings before a harm has occurred, particularly if the harm is speculative. As a result,

> "the backward reach in time of most legal impositions is extremely limited; rarely could one expect an enterprise engaged in the early development of a new technology to reflect in its choices a far-sighted concern for what the law might (or might not) do a decade hence to the technology's users." (Tribe, 1973, i).

In addition, courts do not often have scientific expertise, and they are forced to resolve disputes by weighing the conflicting testimony of expert witnesses on issues related to technological risks and harms.

Another interesting question, which will be the focus of the present article, is whether the courts have a systematic bias in relation to technologies. Observers differ on this point. Some have observed that the fear of tort liability and the unavailability of insurance may dampen innovation in various technological fields, denying benefits to the public, harming international competitiveness, and impeding advances in other related fields (Burk and Boczar, 1994, p.795; Huber, 1985, p.287).

> "The courts especially are said to pander to uninformed and irrational risk attitudes; their decisions show a myopic bias against new technology and in favor

> of its victims. New or complex technologies are subjected to a degree of scrutiny that riskier but established (often private) risk sources never underwent and could not survive." (Gillette and Krier, 1990, p.1030).

Others suggest that "a fair evaluation of the judicial record counters the charge that courts by and large have dampened the development of science and technology." (Jasanoff, 1995, p.218; Gillette and Krier, 1990).

Jasanoff provides a hopeful assessment of the utility of courts in addressing the social consequences of science and technology. She suggests that the incremental, case-by-case method of developing the law through courts is useful in mediating between the conflicting values in technological disputes (Jasanoff, 1995, p.217).

> "Modern technology raises wrenching questions about life and death, human nature and social relationships, to which twentieth-century America seems singularly reluctant to provide collective answers until multiple possible responses have been articulated in many discrete controversies…The relatively decentralized, small-scale, and ad hoc character of judicial decisionmaking permits a more leisurely consideration of moral and ethical questions than is generally possible in the legislative arena." (Jasanoff, 1995, p.217-218).

The purpose of this article is to contribute to the assessment of the role of courts in the social control of technology. As noted above, there is no consensus on the effect or quality of judicial decision-making about technologies, and this article certainly will be unable to resolve this debate. Instead, I would like to ask a different question – can the courts exert effective control over technology? This question will be posed through the lens of the "autonomy of technology" thesis, which suggests that our social control mechanisms are ineffective to control technologies and instead merely adapt society to integrate new technology. My question, then, is do the courts tend to adapt legal doctrines to support and legitimize novel technologies? It will be impossible to offer a persuasive conclusion in this short article, but I hope to provide some examples that justify the question as a fruitful avenue of further inquiry.

The article will proceed as follows. First, I will briefly sketch the idea of "the autonomy of technology," which suggests that technology tends to move along a trajectory that is relatively impervious to deliberate social control and that society instead tends to adapt its values to technological change. Second, I will propose three case studies that suggest that the courts reflect this process. Admittedly, I have selected only cases that support this hypothesis in one way or another, but having hopefully raised a question worthy of further study, I hope in future work to conduct a more thorough and balanced assessment of the hypothesis.

The Autonomy of Technology

The "autonomy of technology" thesis suggests that technology is not subject to human control. This is a curious idea since clearly humans create and use technologies.

Evidently, the idea of technological autonomy is not meant to personify technology, or to suggest that the machines are sentient and running amuck. Instead, the idea reflects a sense that despite our belief that we direct the development of technologies and choose whether or not to use them, this control is more or less illusory. As a technology emerges, human ends are adjusted to match the available means, in a process termed "reverse adaptation" (Winner, 1977, p.227). Winner cites the example of the tools and techniques of measurement to illustrate this effect. As a test is devised to measure the efficacy of schools, the educational process is changed into one of preparing to satisfy the measurement instrument. As Winner puts it, "as a result of the structure of the instrument and human adaptation to it, techniques of measurement become purely self-fulfilling." (Winner, 1977, p. 234-235).

The deep-rooted social concern that we do not really control our technology is reflected repeatedly in our culture, for example in Goethe's "The Sorcerer's Apprentice." The idea of the autonomy of technology is closely associated with the French philosopher and jurist, Jacques Ellul, who conducted one of the early philosophical studies of technology, publishing *The Technological Society* in the mid-20th century. Ellul defined his field of study as "technique," meaning "the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity." (Ellul, 1964 (1954), p.xxv). He correctly cautions against studying merely machines when attempting to understand technology, as our tools range from simple to complex and need not involve physical artifacts (e.g. language, recipes, etc.). At the root of all of our tool-using however, lies the same phenomenon. Feenberg's summarizes this view of the technological phenomenon as "rationality itself, the pure drive for efficiency for increasing control and calculability." (Feenberg, 1999, p.3).

Ellul identified a number of characteristics of modern technique. He suggested that the choice of technique is automatic ("automatism of technical choice") once the problem has been studied to determine the most efficient technique (Ellul, 1964 (1954), p. 79-80). He illustrates the point as follows:

> "A surgical operation which was formerly not feasible but can now be performed is not an object of choice. It simply is. Here we see the prime aspect of technical automatism. Technique itself, *ipso facto* and without indulgence or possible discussion, selects among the means to be employed. The human being is no longer in any sense the agent of choice….[Man] can decide only in favor of the technique that gives the maximum efficiency. But this is not choice." (Ellul, 1964 (1954), p. 80).

The second characteristic of modern technique identified by Ellul is that of "self-augmentation." He writes that technique is progressing without decisive intervention by man (Ellul, 1964 (1954), p. 85). He suggests that this is the product of the minute accretions contributed by modern people, all of whom are immersed in an ideology of technical progress. Technique also engenders itself since, as a new technical form appears, it makes possible a number of others, and new methods can be applied well beyond the fields for which they were primarily invented (Ellul, 1964 (1954), p. 87). In

addition, new techniques pose new technical problems, which themselves must be solved by yet more techniques (Ellul, 1964 (1954), p. 92).

With respect to the autonomy of technology, Ellul writes that technical progress is autonomous of economic, political and social factors (Ellul, 1964 (1954), p. 133). Instead, he argues, "[t]echnique elicits and conditions social, political, and economic change." (Ellul, 1964 (1954), p. 133.) Technique is also autonomous with respect to morality and spiritual values (Ellul, 1964 (1954), p. 134). He suggests that technique used to be viewed as neutral, and thus outside moral judgment, but that now the autonomy of technique is so well-secured that it has become the barometer of what is moral (Ellul, 1964 (1954), p.134).

> "The power and autonomy of technique are so well secured that it, in its turn, has become the judge of what is moral, the creator of a new morality. Thus, it plays the role of creator of a new civilization as well…In any case, in respect to traditional morality, technique affirms itself as an independent power." (Ellul, 1964 (1954), p. 134).

In the end, Ellul cautions, social forces are all aligned to promote technical civilization while maintaining an illusion of liberty, choice and individuality.

> "[I]ndependently of the objectives that man pretends to assign to any given technical means, that means always conceals in itself a finality which cannot be evaded. And if there is a competition between this intrinsic finality and an extrinsic end proposed by man, it is always the intrinsic finality which carries the day. If the technique in question is not exactly adapted to a proposed human end, and if an individual pretends that he is adapting the technique to this end, it is generally quickly evident that it is the end which is being modified, not the technique." (Ellul, 1964 (1954), p. 141).

The autonomy of technology thesis has been subject to a range of criticisms, including the social constructivist view that technologies are very much shaped by social factors and the appearance of determinism arises because the social interests at stake in technological design are forgotten once the technology is completed (Feenberg, 1999, p.10-11). Another criticism is that the autonomy of technology is a self-defeating theory. If we really cannot exert any control over technology, we might as well not try to modify our social control mechanisms to attempt better to deal with technology. On the other hand, even if the autonomy of technology thesis may sometimes be over-stated, it seems dangerous to discard the thesis altogether. It may point to deeper problems with the structure of our thinking and social institutions that make it difficult for us to control technology (Winner, 1977). Winner cautions that the traditional approach to regulation, which focuses on "matters of risk and safeguard, cost and benefit, distribution, and the familiar interest-centered style of politics," is useful but dangerously incomplete (Winner, 1977, p. 317).

> "We may firmly believe that we are developing ways of regulating technology. But is it perhaps more likely that the effort will merely succeed in putting a more elegant administrative façade on old layers of reverse adapted rules, regulations, and practices?" (Winner, 1977, p.320).

Winner suggests that we study our social institutions in the light of the hypothesis that technology enters into and structures the fabric of human life and activity in ways that may be problematic (Winner, 1977, p. 320).

> "A crucial turning point comes when one is able to acknowledge that modern technics, much more than politics as conventionally understood, now legislates the conditions of human existence. New technologies are institutional structures within an evolving constitution that gives shape to a new polity, the technopolis in which we do increasingly live. For the most part, this constitution still evolves with little public scrutiny or debate. Shielded by the conviction that technology is neutral and tool-like, a whole new order is built – piecemeal, step by step, with the parts and pieces linked together in novel ways – without the slightest public awareness or opportunity to dispute the character of the changes underway. It is somnambulism (rather than determinism) that characterizes technological politics – on the left, right and center equally." (Winner, 1977, p. 324).

The objective of this article is to contribute to the assessment of our legal institutions through this lens. In particular, I hope that this article will raise some questions about whether the courts may be systematically supporting the social acceptance of technology and technological values as they develop and apply the private law of tort and contract. Clearly, this narrowed focus fails to offer a complete picture of legal institutions as a mechanism for the social control of technology, and it will also offer no firm conclusion on the role of courts and judges. However, I adopt a working hypothesis that judges, through various private law principles, support and legitimize novel technologies within society. I have selected three cases to support this working hypothesis, although there are likely to be counter-examples to consider in future work.

Case Study #1: Harm is caused by rejecting technology.

Hoffman v. Monsanto Canada Inc. (2005) involved an application to certify a class action on behalf of organic farmers in Saskatchewan against Monsanto Canada Inc. and Bayer Cropscience Inc. to recover damages suffered as a result of the introduction of genetically modified canola. A class action is a procedure that permits representative plaintiffs to represent the interests of a large group, thus permitting small claims to be brought to court although individual plaintiffs may not have the resources to do so. In this case, the defendants had created herbicide-resistant canola by genetic modifications and had received government approval to market it in the mid-1990s. The private organic certification organizations applicable in Canada did not explicitly mention genetically modified organisms ("GMOs") in their standards at that time, although the European organic standard prohibited them. The private certifiers later modified their standards to explicitly prohibit GMOs. The organic farmers argued that because of the

drift of GM canola pollen into their fields, they were unable to grow certified organic canola, and they could no longer use canola in their organic crop rotations.

In order to have a class action certified, plaintiffs must establish various elements set out by provincial statute. One of the necessary elements is that they raise a genuine legal claim, such that it is not plain and obvious from the beginning that the claim is doomed to failure. In *Hoffman*, the plaintiffs proposed several common law torts as foundations for their class action.

One of the arguments raised in return by the defendants was that the harm to the plaintiffs was not caused by the release of GM canola which had been found by the government to be safe. Instead, the harm to organic farmers was caused by the actions of the organic certifiers in producing standards incompatible with the inevitable drift of GM canola, as well as by the decisions of organic farmers to try to adhere to these standards (*Hoffman*, 2005, para. 106). This is an interesting argument that essentially suggests that it is not the parties modifying the environment with a novel technology that cause harm to others, but it is the parties that seek to avoid the use of a new technology that bring harm upon themselves.

Although the trial judge did not explicitly approve this view of things, she appears to have been sympathetic, suggesting that the plaintiffs would have difficulty in meeting the defendant's argument (*Hoffman*, 2005, para. 108). Throughout the judgment, the trial judge seems to have been quite receptive to the characterization of the losses as flowing from the rejection of GMOs by organic certifiers and markets.

> "It is clear that the principal challenge faced by the plaintiffs in relation to this criterion is to persuade the Court that there is a plausible legal basis for imposing on the defendants' liability for losses the plaintiffs may have suffered as a result of the adventitious presence of GM canola in crops or fields of organic grain farmers, and for losses related to the fact that the standards imposed by third parties (organic certifiers or organic markets) might prohibit the use or presence of GMOs in relation to commodities marketed as organic." (*Hoffman*, 2005, para. 35).

To be fair, the trial judge did not completely reject the possibility of liability for the introduction of GM technology. However, liability in negligence would depend upon the specific harm being reasonably foreseeable. In other words, the plaintiffs would have to allege that the defendants knew or ought to have known how the private organic certifiers and organic markets would react (*Hoffman*, 2005, para.64). It is curious that, in this case, the trial judge found that the pleadings failed to suggest that the harm was foreseeable even though at the time the defendants marketed their GM canola in Canada, the European Union prohibited the use of GM material within products marketed as organic (*Hoffman*, 2005, para. 65). It seems uncontroversial that sophisticated agri-chemical multi-national corporations would have been eminently aware of the rules in the European Union.

Negligence law also applies special and more restrictive rules in the context of "pure economic losses." Pure economic losses are losses that do not flow from physical damage to people or property. The focus on the reaction of the organic market, rather than on the modification of the environment led the trial judge to characterize the situation as one of pure economic loss.

> "In effect, the alleged damage is not of physical harm to the plaintiffs' crops, but arises from the alleged inability to meet the requirements of organic certifiers or of foreign markets for organic canola. There is no allegation that GM canola is unhealthy or causes detrimental physical problems to humans or plant life." (*Hoffman,* 2005, para. 72).

Although the trial judge did not reject the possibility that economic losses of this type might be recoverable, she found that they were not in this case due to the fact that the harm was not foreseeable, and there were compelling reasons of policy not to find liability. Among the policy reasons cited by the trial judge as militating against liability in this case was the fact that the government had already approved the marketing of GM canola. As a result there was an "express governmental policy" in favour of GM canola (*Hoffman,* 2005, para. 71).

The result of the court's emphasis on the reaction of the complainant to a technology is to shift the way one thinks about the harm resulting from the technology. Rather than focusing on the party that has introduced the novel technology in a way that will inevitably (as the defendants in *Hoffman* admitted) result in a modification of the environment, one does not see that modification as harm. Instead, one finds the source of the harm elsewhere. The harm in *Hoffman* is thus due to organic certifiers and markets who reject the technology and to the insistence of organic farmers on trying to meet the requirements of those organic markets. This approach is consistent with Winner's observation that society reverse adapts to a new technology. The courts, in adopting this approach, are helping to make the technology an invisible part of the cultural "wallpaper," such that rejection of the technology is irrational and is the source of any harm suffered.

Case Study #2 You must submit to technologies considered reasonable by the majority.

The doctrine of mitigation holds that a plaintiff cannot recover from the defendant damages which could reasonably have been avoided. This makes sense as it encourages plaintiffs to behave in a manner that limits the harm flowing from the tortious injury done by the defendant. It would be unfair for a plaintiff to refuse to take reasonable steps that could limit the loss, and to seek compensation for the avoidable losses from the defendant. On the other hand, the innocent plaintiff was forced into the position by the defendant's wrongdoing, and so fairness requires that the plaintiff not be required to mitigate his or her losses in ways that are objectionable to the plaintiff.

How then should the law resolve the question of the steps that a plaintiff must take in mitigation? One approach is to require the plaintiff to do what the plaintiff

subjectively is able and willing to do. The disadvantage of this approach is that it leaves great room for capricious and unreasonable behaviour by the plaintiff. Another approach is to require the plaintiff to do what is objectively reasonable, namely what the average reasonable person would be able and willing to do. The disadvantage of this approach is that it imposes on the innocent plaintiff the obligation of taking steps that he or she may not wish to take even though they are viewed by the majority as appropriate.

The courts have chosen generally to apply the objective approach. The implication of this is that where the majority has accepted a particular technology, a plaintiff will also be required to adopt it if the technology would assist in mitigating the plaintiff's losses. This becomes particularly troubling in the context of medical technologies, where a plaintiff must submit to treatment if he or she wishes to recover compensation for injuries. Clearly, this is not the same as physically forcing an unwilling person to undergo treatment. However, the economic duress faced by persons unable to work as a result of their injuries will in some cases exert serious pressure to comply with the mitigation requirement in order to obtain compensation through the courts.

In *Janiak v. Ippolito,* (1985) the Supreme Court of Canada considered whether the doctrine of mitigation required a plaintiff to undergo spinal surgery. The plaintiff was seriously injured in a car accident by the defendant, who admitted liability for negligent driving. The plaintiff was unable to return to work due to the spinal injury suffered in the accident. His physicians recommended removal of a disc and spinal fusion. At trial, the judge accepted evidence that the surgery had a 70% chance of producing a full recovery. The plaintiff, however, had a great fear of surgery and refused to undergo the spinal surgery. The Court accepted that it would be inappropriate for a court to require any person to undergo surgery (*Janiak,* 1985, para.43). Nonetheless, the Court held that a plaintiff must mitigate his damages by making objectively reasonable decisions about medical treatment. In this case, the plaintiff's refusal was deemed unreasonable, and the Court awarded him only 30% compensation as there was a 70% chance he would have had a full recovery.

This reasoning has been applied with respect to other forms of medical treatment. In *Marcroft v. Scruttons,* (1954) the court addressed a case in which an employee suffered a 10 foot fall due to his employer's admitted negligence. He did not suffer serious physical injuries, but suffered shock and developed severe anxiety and depression that made him unable to work. His doctors recommended electric shock treatment at a psychiatric hospital. The plaintiff did not wish to go to a psychiatric institution and so refused the treatment. The court stated that his refusal was unreasonable, and refused to award compensation. Lord Singleton stated that "[i]f the general opinion is that that treatment would cure him, or, at least, render him in a much better state in every way, then he ought to undergo the treatment." (*Marcroft,* 1954). The language employed by Lord Denning is more striking in demonstrating that a responsible person will behave reasonably by submitting to the currently accepted technologies. He wrote that,

> "[w]e should do great harm if we allowed him to go on receiving compensation for the rest of his life because of his refusal to accept medical treatment. Persons

> who suffer from an anxiety state have more chance of recovery if they are treated as responsible human beings and are expected to behave reasonably, rather than as weaklings who can give way to their weakness and expect to get paid for it." (*Marcroft*, 1954).

The case law dealing with refusals of medical treatment motivated by psychological factors is a bit complicated, and the lines drawn seem somewhat arbitrary. The mitigation requirement is not applied to those who have a pre-existing psychological disability that interferes with the ability to take the objectively rational decision to accept treatment. In addition, if a plaintiff has a pre-disposition to such a psychological disability, and the injury brings on the disability leading to a refusal of treatment, the mitigation requirement is not applicable (*Elloway*, 1968). The rationale for this is that a defendant must take the plaintiff as he or she is, and the plaintiff cannot be held responsible for failing to take a decision he or she was incapable of taking. However, this exception is available because the plaintiffs are viewed as *incapable* of behaving reasonably due to no fault of their own. The view of reasonableness is undisturbed. The mitigation requirement will be applied to those whose refusal of treatment is due to entirely genuine fear or antipathy toward medical treatment, or to a psychological condition developed after the injury or as a result of failure to seek treatment (*White*, 1996; *Ksiazek*, 2006; *Janiak*, 1985, para 13).

There are nevertheless some limits to what the courts require a plaintiff to undergo by way of mitigation. The courts seem to baulk at requiring plaintiffs to undergo certain types of treatments. For example, a plaintiff who had mistakenly received a tubal ligation was not required to mitigate by pursuing *in vitro* fertilization (*Adan*, 1998). The judge in that case stated that it would not be reasonable to require "a plaintiff who, through surgical intervention, has been denied the ability to naturally reproduce, to undergo further invasive procedures by way of mitigation to achieve conception." (*Adan*, 1998, para. 51). In *Bourgoin v. Leamington (Municipality)* (2006), after the failure of all other types of treatment, one of the plaintiff's physicians had recommended amputation of her leg because that would be 95% likely to relieve her chronic pain and enable her to return to work. The defendant argued that her refusal to submit to the amputation was a failure to mitigate her losses. The court avoided having to decide this issue by finding that the plaintiff had received conflicting medical opinions, and so was not unreasonable in refusing the amputation.

> "Is Ms. Burgoin's refusal of an amputation reasonable? It is my view that it is one thing to say that such an operation is objectively reasonable. It is quite a different thing to say that Ms. Bourgoin is acting unreasonably in refusing to have an amputation of part of her right leg. Refusing a back operation as the plaintiff did in *Janiak v. Ippolito* is not the same thing as refusing to have a major limb removed. It is my view that our law is not such that a refusal of an amputation can be considered unreasonable with the result that a plaintiff could be found to not have mitigated his or her losses. Whether a refusal to undergo a permanent mutilation of one's body as treatment for chronic pain could ever be considered

> reasonable may be for another court on another day." (*Burgoin*, 2006, para.111-112).

The court thus left open the question of whether the doctrine of mitigation might require a plaintiff to submit to amputation. This is a highly unpleasant and alarming idea, as the judge's language seems to suggest. Nevertheless, one can imagine a situation in which a court may rule in this way. A plaintiff suffering a serious infection (e.g. the necrotizing fasciitis caused by the so-called "flesh-eating" bacteria) that could be proven to result from a defendant's carelessness might not be able to sue for compensation for more severe injuries that could have been avoided if the plaintiff submitted to an amputation.

Courts have also faced the suggestion that the duty to mitigate might involve abortion or giving a child up for adoption. In *Bevilacqua v. Altenkirk* (2004), the court discussed the question of mitigation in the context of a negligent sterilization procedure resulting in an undesired pregnancy. The court suggested that "[a] decision to abort a foetus or give a child up for adoption is a decision of a monumental personal nature. If such a decision is ever relevant to mitigation, it must be in rare cases; it is difficult to imagine a situation in which a decision to keep a child could ever properly be branded 'unreasonable'." (*Bevilacqua*, 2004, para. 199). Another judge wrote that,

> "[a] decision to abort a fetus or to give a child up for adoption are intensely personal decisions which are the parents' to make. They may well scar the parents emotionally or affect the family unit as a whole. It is difficult to imagine a situation in which such a decision could or should be considered unreasonable and leading to a finding that the plaintiff failed to mitigate her damages." (*Roe*, 2004, para. 220).

On the other hand, the judge in *Kealey v. Berezowski et al.* (1996) observed that the plaintiffs were free to refuse abortion or adoption and that "a court should not ordinarily inquire into the reasons which informed these very personal choices. However, when parents ask a court to be relieved of the consequences of those choices, I think it is appropriate for a court to ask whether it was reasonable in the circumstances to have made those choices."

Religious objection to treatment is another area in which the doctrine of mitigation causes trouble. Most U.S. cases have reduced or refused compensation to plaintiffs who have refused the recommended medical treatment on religious grounds (Loomis, 2007, p.474). The decisions are split between those which apply a strictly objective test of reasonableness according to which religion cannot justify an otherwise unreasonable failure to mitigate and those in which the jury is told that it can consider the plaintiff's religion as a factor in assessing reasonableness (Loomis, 2007, p.475-482). For example, in *Williams v. Bright* (1997) the Court of Appeal indicated that the proper instruction to the jury was as follows:

> "In considering whether the plaintiff acted as a reasonably prudent person, you may consider the plaintiff's testimony that she is a believer in the Jehovah's Witness faith, and that as an adherent of that faith, she cannot accept any medical treatment which requires a blood transfusion. I charge you that such belief is a factor for you to consider, together with all the other evidence you have heard, in determining whether the plaintiff acted reasonably in caring for her injures, keeping in mind, however, that the overriding test is whether the plaintiff acted as a reasonably prudent person, under all the circumstances confronting her."(*Williams*, 1997, p.915-916).

The result of such an approach is to leave considerable discretion with the jury (Loomis, 2007, p.482). In Canada, the case of *Hobbs v. Robertson* (2004), dealt with a patient who died following surgery as a result of uncontrolled bleeding due to surgical negligence. The patient, a Jehovah's Witness, had signed a document refusing blood transfusions before surgery and releasing the hospital and physicians from responsibility for any harms arising from refusal of the transfusions. Her family sued, arguing that the release was not intended to apply where the health care team negligently creates a need for the transfusion. The court rejected this argument.

> "A reasonable person would be aware that any physician may, from time to time, make a mistake that amounts to negligence. It is difficult to accept that a person should be able to deny a physician the opportunity to use every tool in his or her arsenal to overcome the effects of negligence and require the physician to accept full responsibility when, as with any other patient, the effects of the negligence could have been fully ameliorated." (*Hobbs*, 2004, para.72).

In summary, the doctrine of mitigation generally requires a plaintiff to submit to the majoritarian view of medical technologies. This majoritarian view will often override genuine and deeply-held fears and moral beliefs. In this way, the courts are again promoting the cultural integration of technologies by labeling as unreasonable an attempt to avoid them. We may feel that it is reasonable to do this, and that a plaintiff should not be able to obtain compensation for avoidable harms. However, this does not change the systematic tendency of this rule to legitimize certain technologies and to put pressure on dissentients to submit to them.

Case Study #3 You "consent" to contractual terms that you have no way of knowing ahead of time because it is efficient.

The classical theory of contract law envisaged a sphere of private ordering within which individuals would be largely free to assume obligations and structure their relationships with one another. The standard model was of a freely-accepted and negotiated bargain between independent and self-interested individuals (Feinman, 1990, p.1286). There are numerous theories justifying the enforcement of contracts by the state (through the courts). The "will theory" justifies enforcement on the basis that the parties have "willed" or chosen to be bound, and the law of contract protects this will (Barnett, 1986, p.272). The "reliance theory" holds that contracts should be enforced because a

party has induced another to rely on his or her promise, and it is thus fair to both to enforce the contract (Barnett, 1986, p.274). Barnett suggests that the fundamental reason why we legally enforce contractual promises (rather than other promises) is because of the element of consent, namely consent to be legally obligated (Barnett, 1986, p.291).

It is clear that these theories are suffused with ideas of individual choice and autonomy. However, the vast majority of contracts into which the average person enters do not fit the model of the freely-chosen and negotiated exchange. Instead, most such contracts are standard form contracts and contracts of adhesion. A standard form contract is a set of pre-drafted terms presented by one party to the other. These contracts are often adhesion contracts, which means that they are presented on a "take it or leave it basis" such that there is no scope to negotiate any of the terms. This manner of contracting reflects the needs of mass-market transactions. It would be exceedingly inefficient and expensive to have to negotiate the terms of all of the many small transactions we engage in. However, the danger of this manner of contracting is that the stronger or more experienced parties may impose unfair terms, and the weaker and less experienced parties rarely read the terms since they cannot change them even if they dislike them. Contract law tolerates this state of affairs, although various rules have been adopted both in contract law and in statutes to govern the terms that are permissible in such contracts. Nonetheless, if the validity of enforcing a contract is based on the idea of a voluntarily assumed obligation, the foundation of this type of contract is a bit shaky. It is harder to justify enforcement where everyone knows that one party has no power to negotiate the terms and likely does not know what they are. One may appeal to a more attenuated form of consent to justify enforcement in such cases. A party who agrees to a standard form contract without reading the terms manifests some form of consent since the party could read the terms and chooses not to do so.

With the development of mass-market software, another form of contract arose which became known as the "shrinkwrap contract." This form of contracting occurred where software was sold in a shrinkwrapped box that bore a notice indicating that the contractual terms were inside the box. A purchaser was thus faced with the option of buying the software without knowledge of the contractual terms, under conditions where there was no realistic chance to return the software if the terms were found to be objectionable. Here, even the attenuated form of consent mentioned in relation to standard form contracts does not really exist. Enforcement of such a contract must be based on the idea that it is acceptable to enforce terms against a party who had no opportunity to read them before accepting to be bound notwithstanding the fundamental importance of consent in justifying enforcement. In fact, courts have essentially done this.

In *ProCD, Inc. v. Zeidenberg* (1996), the court upheld the enforceability of shrinkwrap contracts. Interestingly, the judge stated that the defendant purchaser's argument that the terms inside the box were unenforceable would "return transactions to the horse-and-buggy age" if taken seriously (*ProCD*, 1996, p.1452). The judge held that shrinkwrap contracts are acceptable since dissatisfied purchasers could return the opened software to the store if they disliked the terms. Of course, this was never really possible

and could not seriously be accepted by software vendors due to the risk that purchasers would copy and return software for a refund. Nevertheless, the judge noted that shrinkwrap contracts were legitimate, and useful.

> "Notice on the outside, terms on the inside, and a right to return the software for a refund if the terms are unacceptable a right that the license expressly extends), may be a means of doing business valuable to buyers and sellers alike." (*ProCD*, 1996, p.1451).

The judge noted the doubtlessly true statement that standard agreements were essential to a system of mass production and distribution (*ProCD*, 1996, p.1451). However, the ruling in *ProCD* is based on the erroneous assumption that a buyer can return the software if unhappy with the terms, and the judgment also ignores the fact that other contracting processes more congenial to contractual theory might be possible (e.g. posting a set of terms near the packaged software).

This example is cited here to illustrate the rhetoric chosen to denigrate an argument against an efficient contracting process. The buyer was accused rather anachronistically of seeking to return software transactions to the "horse-and-buggy" age. The court's concern for the fundamental legitimacy of the contract (namely that a party has voluntarily consented to be bound by the terms) is overshadowed by its enthusiasm for the needs of a system of mass production and distribution. The contract in this case contained a nod to contractual legitimacy in the form of a right to return the software, and this was sufficient from the court's perspective even though the right was illusory.

Conclusion

This article has sought to contribute to the understanding of whether our legal institutions effectively control technology, or whether (as is predicted by the "autonomy of technology" thesis) they are more likely to be systematically adapting society to the technology. I have taken a narrow approach in this article, looking only at certain private law doctrines as applied by judges.

My working hypothesis has been that judges, through various private law principles, support and legitimize novel technologies. My case studies were selected to support this hypothesis by showing that courts sometimes (a) characterize harm as flowing not from a technology that actually alters the world but from a rejection of that technology, (b) require parties seeking compensation for serious injury to submit to medical technology that they do not wish to undergo for genuine reasons of fear or moral objection, and (c) whittle away at fundamental theoretical principles of the law in order to promote efficiency in mass production and distribution. I suggest that these examples tend to support the working hypothesis. Clearly, further work would be helpful in identifying counter-examples and in studying other legal doctrines to see if they support or undermine the hypothesis.

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