

Chapter 10

Does Law Wear Out?



David Howarth

The theme of *Law as Engineering: Thinking about what lawyers do* (Howarth 2014), a theme ultimately derived from Herbert Simon's *The Sciences of the Artificial* (Simon 1996), is that lawyers are in the business of creating artificial social structure. Long-term commercial contracts, wills, statutes, constitutions and international treaties are all attempts to alter the course of social events in ways desired by their designers in response to the desires of their clients. Litigation, which forms the basis of the public stereotype of what lawyers do, is a minority activity akin to military engineering. For the most part, lawyers, like engineers, spend their time not in conflictual activities but in cooperative ones, trying to clarify what their clients want (and do not want) and coming up with designs that fulfil their clients' objectives at reasonable cost. Because lawyers face design problems similar to those faced by engineers, albeit ones mainly in the social world rather than mainly in the physical, it is not surprising that their approaches overlap and that they can learn from one another.

10.1 Extended Action Through Time

One feature of lawyers' attempts at changing the course of social events is that they are usually not one-off interventions intended to push a single event in a new direction one time only. Instead, they attempt to set up constant pressure to shape events in desired ways over extended periods of time. Long-term contracts are designed to sustain a relationship between the parties, inducing all of them to deliver on their promises and resolving disputes as they arise (Deakin and Koukiadaki 2009). Similarly, statutes aim to change social behaviour, deterring

D. Howarth (✉)
University of Cambridge, Cambridge, UK
e-mail: drh20@cam.ac.uk

some behaviours and encouraging or facilitating others, not just once but over and over again. Engineers too often design structures and devices intended to produce the same effect repeatedly over time—indeed most products other than food, soap, fuel and explosives have this characteristic. This suggests a project of asking whether lawyers might benefit from engineers’ insights about the design of structures and devices that have this temporal component.

The aspect of the project taken up here, in a very preliminary sketch, is perhaps the most basic. Devices designed to operate through extended periods of time tend to deteriorate and eventually to fail. Physical devices wear out. Software becomes obsolete (Verma et al. 2016). Engineers have spent much effort developing methods of anticipating and correcting such deterioration. For their part, lawyers know that contracts are often renegotiated and statutes are often amended. That looks very much like deterioration over time being corrected.

More specifically, we can identify situations in which a legal device no longer produces the results desired by clients and needs to be changed to restore it to functionality. Two types of processes immediately spring to mind through which a legal device no longer produces desired results.

- The first is where different results come to be desired. One can imagine, for example, new legislators being elected who want outcomes different from those their predecessors wanted or new managers taking over a corporation who have a different risk profile. These situations are interesting from a design point of view because the designer faces a choice between starting again and attempting to repurpose an existing device. The former is expensive but the latter might not work.
- The second way a device might no longer bring about desired effects is that, without any change in what is desired, something happens to change the device’s output from the desired path. For example, court decisions might alter the meaning or effectiveness of contractual terms or of statutory provisions. In these situations, the question is not how to adapt a device to new purposes but whether to repair it so that it carries out its original purpose, and if so, how to do so (a process that in practice can be messy and sticky: see, e.g. Gulati and Scott 2013).

Both processes are familiar to engineers. Here I concentrate on the latter process, but lawyers and engineers should also be able to exchange ideas and practices about the former.

10.2 A Legal Bathtub Curve?

An obvious place to start is with reliability engineering and to think about the relevant sources of failure for a legal device such as a statute (a very similar exercise could be carried out for other devices, such as treaties and commercial contracts). For

physical products, we might point to ‘infant mortality’ failure, random failures and failures consequent on a product wearing out (Nash 2016; Verma et al. 2016). But what are the sources of legal failure? We might point to a similar trio of sources.

- First, devices might fail properly to capture clients’ objectives in themselves. A tax statute, for example, might turn out to have an unintended effect of causing losses to a subset of taxpayers favoured by legislators.
- Second, unanticipated interactions might occur between the legal device and its social environment. That principally means people behaving in ways the designers of the law failed to anticipate, including behaviours resulting from the adoption of new technologies. Autonomous vehicles, for example, will mean that the whole basis for civil liability and insurance in road traffic accidents, the assumption that cars have drivers, might disappear. Instead legal attention will turn to other forms of liability, in particular product liability, but the question will be whether that form of liability is ready for its new role? In the EU, for example, it is not even clear that software counts as a ‘product’ (Saxby 2016).
- Third, failures might arise from interactions with other legal devices or processes—for example, court decisions might undermine what everyone thought a rule meant, or new statutes might be passed that are not entirely consistent with the previous statute.

As a first cut, one might speculate that problems arising from failures to capture the parties’ intentions would come to light early in the life of the statute. In the tax example, it would not be long before the effects become known and complained about. Problems arising from unanticipated interactions with the social environment would occur, one might presume, at a constant rate across the life of the statute. But problems from interactions with other legal processes would tend to rise over time, since, although court cases and new statutes might be random, the number of possible interactions between the statute and cases and new statutes will rise as new cases and statutes accumulate.

On that basis, the typical shape of a legal hazard function would be the familiar bathtub, combining a falling early function, a constant random function and a rising late function. (See Fig. 10.1).

10.3 Sketches for an Empirical Test

The means for easily testing this theory do not yet exist (although work being carried out by the National Archive in London on the UK statutes might at some point give rise to some possibilities).¹ It is difficult to observe faults directly but some proxies might be developed. One possible indication of the existence of a fault is an amendment by a subsequent statute. Admittedly, an amendment is in

¹<http://www.legislation.gov.uk/projects/big-data-for-law>.

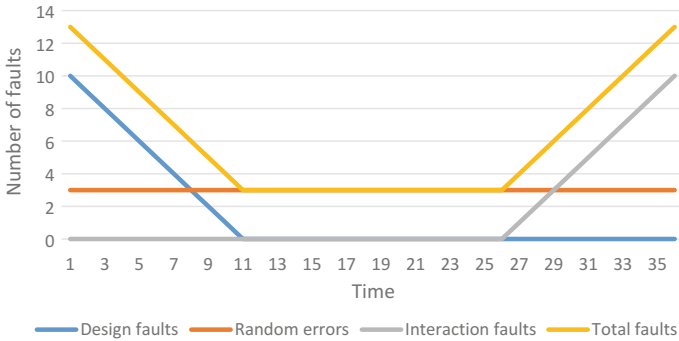


Fig. 10.1 Bathtub curve for law

itself not a fault but rather an attempt at correcting a fault, but if we assume a constant ratio of corrected to uncorrected faults, the amendment rate should be an indication of the underlying fault rate. Another possible indication of a fault is whether a statutory section gives rise to litigation. Because of the cost of litigation, well-designed statutes whose meaning is clear are unlikely to be litigated and so the rate at which people go to court about a statute is an indication of whether something is wrong. Admittedly in the USA, in contrast to the UK, a statute might be litigated not because it is unclear but because it is alleged to be unconstitutional. In that case, the existence of litigation might indicate not a fault in the statute but rather a fault in the constitution. Alternatively, constitutional review might be seen as a ‘burn-in’ process for statutes.

If we were able to count how many amendments have been made to a statute over time and on how many occasions it has caused litigation, we should be able to construct the statute’s empirical hazard curve. At some stage, the National Archive project might succeed in making such counts a fairly straightforward exercise. In the meantime, however, we can do some simple counts, using existing databases for exploratory purposes. For example, we can take a UK statute, the Companies Act 2006, a comprehensive reform and codification of company law, and count the number of amendments made to it by year since it was passed.² The result is given in Fig. 10.2.

We can also count the number of cases reported in the law reports that mention the 2006 Act. Only a small proportion of claims come to court and not all cases heard by the courts are officially reported (although the proportion reported in the higher courts is much greater than it was, as a result of it becoming standard practice to store judgments electronically and online). In addition, the mere mention

²The count is of changes to the Act and applications of it to new circumstances, but not orders merely bringing parts of the Act into force. UK statutes passed by Parliament having been proposed by ministers usually come into force not when they are passed but by later executive order. Failure to bring a part of an Act into force might be another indication of a design fault, but I have not attempted here to include such faults in the analysis.

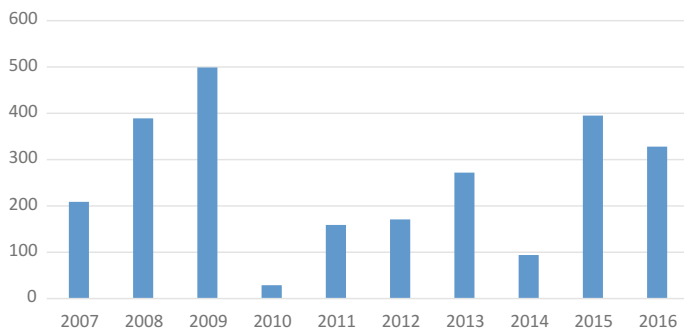


Fig. 10.2 UK Companies Act 2006: number of amendments by year 2007–2016. Source: Author’s count using Legislation.co.uk database

of a statute in a case does not necessarily mean that it has caused a problem. But assuming that the proportions of claims to cases coming to court, of cases reported to cases not reported and of problems to mere mentions all remain constant, the number of reported mentions by year is capable of being informative. It should also be remembered that new statutes usually have a long lead-in period with regard to case law. A new statute applies only to situations that arise after it becomes law. Disputes whose facts occurred before the date the new law comes into force, even if the date is after the new law itself came into force, are governed by the law as it stood previously. For that reason, it is useful also to count mentions in the cases of the previous law, in this case the Companies Act 1985. The results are presented in Fig. 10.3.

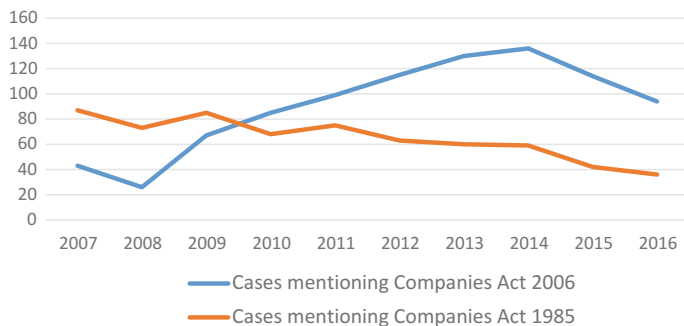


Fig. 10.3 Case law mentions 2007–16 of the Companies Acts 2006 and 1985. Source: Author’s count using Westlaw UK database

10.4 Bathtub or Sawtooth or Both?

The pattern for both statutory amendments and case mentions, while not in any way conclusive, seems broadly compatible with the bathtub curve. As the new law comes to be used, problems are identified that result in amendments being needed to correct them. The number of problems then seems to fall off, suggesting a possible move into the ‘normal operating’ phase, followed by a phase in which interaction with other legal developments begins to cause problems. The case law pattern seems to be a lagged version of the first part of the amendment pattern, a result of the new law only slowly taking over from the old.

The amendment pattern, however, is also compatible with a different kind of cycle, namely the ‘sawtooth’ pattern proposed for software development (Schick and Wolverton 1978; Pan 1999), in which faults start at a high level and then fall in the test and debugging phase, but rise suddenly with each upgrade before falling to a steady rate as the product becomes obsolete. It is also possible that statutes might follow a combination of the bathtub and the sawtooth, in which faults start high then fall, rise quickly each time the legislature attempts a reform and then fall again, but finally rise as interaction problems come to the fore.

10.5 Possible Future Directions

Much more research is needed before we can even begin to establish the life cycle of statutes. It is possible that statutes about different subjects have different cycles, or that they have similar cycles but of different lengths. It is also possible that different political systems produce different cycles. A system characterised by strong checks and balances such as that of the USA might find statutory amendment difficult, causing faults to find expression more in the case law and less in the legislature, with the whole life cycle taking much longer than in systems, such as that in the UK, characterised by weak checks and balances.

Indeed one final speculation is that constitutions themselves might be subject to life cycles. Thomas Jefferson wanted the US Constitution to be renegotiated every 19 years (Jefferson 1789). Instead, the Constitution has become permanent. But one can perceive in US constitutional history a kind of bathtub. The Bill of Rights, the first ten amendments, are classic design fault corrections. Then random faults come along, including a complete breakdown in the 1860s. After two centuries, however, the Constitution increasingly suffers from interaction problems, especially from incompatible court decisions, incoherently amended statutes and tensions between different levels of government. In other countries, complete replacement of the constitution is not uncommon. France, for example, is on its fifth republic. The USA, however, despite possessing a mechanism for achieving a replacement of its Constitution without breaking legal continuity, in the form of a Convention called under Article 5, chooses to struggle on at the high right-hand side of the curve.

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