

## ***Symposium: Jurisprudence and its Impact Upon Public Policy***

### **Jurisprudence and its Impact Upon Public Policy - An Address**

Paul Gallagher

*Senior Counsel and Attorney General of Ireland*

(read before the Society, 26<sup>th</sup> November 2020)

**Keywords:** Jurisprudence Law and Economics, International Law, Tax Law, Litigation Process, Human Rights  
**JELs:** K10, K20, K33, K34, K38, K41

I am honoured to be invited to address the Society. I want to talk in broad terms on the topic of jurisprudence but with a particular focus on the role of that statistics are capable of playing in the legal world. More broadly I will comment on the role that statistics play in informing us in making decisions.

We live in a universe where ignorance prevails. We know many things, but there is much we do not know. In this essentially uncertain world it is foolish to ask for absolute certainty. That doesn't mean that we are completely in the dark between certainty and complete uncertainty. There is an intermediate space in which our lives and our thoughts unfold. And perhaps it's that intermediate space that I want to look at the moment in terms of information and knowledge generally with specific reference to the law.

If we lack absolute certainty, you might ask, what is the value of knowledge? Well, I think recent years have reinforced the understanding and belief of the importance of knowledge and the importance that decision makers should attach to knowledge and proper information on which to base their decisions, whether they are policy makers or lawyers or judges. This rejection of evidence of experts that we have seen in the last number of years is not new. When Galileo was accused of heresy by the church in the Middle Ages, he asked that the church cardinals would look through his telescope to see what he could see, but they refused to look through the telescope. They said what he was seeing was dirt at the other end of the lens, or the moons which he proclaimed to exist, were within the telescope.

This is not just a modern day phenomenon, but it has, as I say, in recent years, acquired a vibrancy and an importance that should alarm us all. During the UK Brexit referendum campaign we all know that one of the great slogans was that this would involve if the UK left Europe a contribution of £350 million a week to the National Health Service, because that was the estimated amount that the UK was paying to the EU. The UK Statistics Authority said this figure was incorrect. It was a gross figure and it did not take account of the benefits which the UK receives from the EU. The Conservative MP Michael Gove's response to that was that the "people are fed up with experts" and this idea that you reject expert knowledge, whether of a statistical type, or of another type, is something that has taken hold and has cost us dear, it seems to me, in the last number of years in terms of maintaining institutions within countries, democratic institutions, and more broadly at an international level. Public policy should be informed by statistics, and public policy can take years to develop because the information which underlies and should inform it can often take a very long time to accumulate.

We perhaps have got used to using statistics in the formulation of public policy. And more recently, within recent governments there's a much greater consciousness of the importance of informing legislative change, informing policy decisions, with statistics and in that regard the Central Statistics Office plays a vital role. The absence of accurate scientific information, which doesn't come just in the form of statistics, but in respect of which statistic plays an important role, leaves us impoverished in what we can do, and in what we can achieve.

In the covid-19 crisis, we have had the difficulty that the statistics weren't there at the beginning of the crisis to inform us how we could address the issues that arose. The lack of knowledge was based partly on the absence of statistical epidemiological data that could help us make informed decisions. And we have discovered the importance in developing those statistics and making informed decisions as we have acquired them through the period of the crisis. Obviously, there's still an absence of the type of solid statistical information that would be ideal in making decisions. But we've had to do the best we can with the absence of an important ingredient in informed decision making. In turn, if you look at the broader scientific response, it has been nothing short of

remarkable because from a standing start in February 2020, we're now in a position where we have developed a range of vaccines against the virus. And that is an amazing achievement. The development of the vaccines, of course, involved trials which involve statistics. And ultimately the approval of those vaccines involves statistical exercises and judgments that are crucial to making those available to the public.

The motto of the Royal Society, as you know, is that *Nullius in Verba*, we should not take any person's word for it. What we need is evidence. We need to look at what the science says, recognising that it has limitations and that scientific propositions today are only as good as their ultimate ability to withstand scrutiny and to withstand challenge. And it's through that scrutiny and challenge that we develop the scientific knowledge that has now created a world where at one level we still have great uncertainty, but at another level we have a surplus of information that is very difficult to handle and very difficult to digest and use in a structured way in order to make, as I say, decisions to guide our lives and to ensure that we are getting the best from the universe of knowledge that is available to us.

One of the things that harms decision making, both at a policy level and at a legal level, is people relying on their gut instincts. Many people boast that they have an instinctive reaction, an instinct of knowledge that helps them solve problems, and I think we all know that is a very dangerous methodology to use to address problems both at a scientific level, at a policy level, and very much at a judicial level or at a legal level. We must examine the basis for any instinct we have and ensure that the ultimate decision is not overborne by the instinct.

Daniel Kahneman, the great Nobel Economic Prize winner, described how many people are attached to gut instincts in decisions they make and use those gut instincts to evaluate information and reinforce beliefs that they have already had. Donald Trump's former right-hand man, Stephen Bannon, told Michael Lewis that the Democrats don't matter. He said the real opposition is the media and the way to deal with them is to flood them with nonsense. And people who have gut instincts that align with that nonsense will actually be reinforced in their beliefs and will become convinced that certain things are so. So it's that care that we need to have that realization that gut instincts can be influenced by nonsense that is put through the myriad of media and social media outlets that now exist.

Stephen Jay Gould, the great palaeontologist, was told when I think he was about 40 that he had eight months to live from a rare cancer and he described how his immediate reaction was one of horror and despair. And then he reflected and he realized that, in fact, what the doctor told him was that the *median* life expectancy for somebody with cancer of his age was eight years. When he drilled down through the figures, he realized that obviously this being a median age it was not the upper limit and there were many factors that he benefited from. He was highly educated. He could research, he could identify the best doctors, he had and lived in a good environment and he could afford good medical treatment. Gould's doctor had advised him not to look at the literature that that would upset him. But as a scientist, his first reaction was to look at the literature. And he lived a long life and he was not one of those who died within that median period of eight years.

Similarly, people's reaction to what they hear on the news and the social media is informed by gut instincts in many cases and in large part informed by a complete lack of knowledge of statistics, perhaps more appropriately, one should say, misinformed by that. In Italy, a few years ago, there was a programme on television which showed how cancer patients were reportedly recovering after being treated with alternative medicine by a doctor called Di Bella. And it was said, what better proof is there of the efficacy of natural treatments to those suffering from serious tumours? Well, what they didn't, of course, appreciate was that by the law of averages, statistically, you will get recoveries that are unrelated to any positive effect from the treatment that has been given and to discover whether natural remedies actually are effective in terms of treatment, you need to work out how many times these remedies have failed, you need to compare the results with those of untreated patients. You need to study the results of those who are treated by traditional medicines. But it's this presentation of knowledge to people, and that includes most of us who don't understand the importance of scientific analysis and more particularly of statistics that leads people to make decisions both in their own lives and to respond to decisions that are made at the macro or policy level in a way that is misinformed in a way that is ultimately damaging to the coherence and understanding that is necessary to have a properly functioning society achieve its best potential.

Most of you, I'm sure probably all of you, are familiar with the *Book of How to Lie with Statistics* published in 1984 by Daryl Huff and one of the examples that he gave in that book was a survey in the 1950s of the 1924 class of Yale graduates and the survey seemed to indicate that they had an average income close to \$500,000 in today's terms, and this was plausible enough to believe, this was Yale with lots of bright people. But if you drill down through the figures, you'd ask, is that really the average? And of course, the answer was no. And Huff explains in his book that this improbable, though pleasing figure was based on self-reported data, which firstly meant that

certain people exaggerated their income to demonstrate their success. It was also a survey of only those people who were prepared to respond and also a survey that related to only those people that Yale at that stage kept a record of. And the belief not unfair was that they kept a record of those graduates who did well but was less concerned with those who did not do well.

And so you can lie with statistics and of course, you can lie with any information. And the whole concept of fake news that now pervades is a demonstration of how misinformation can take hold and leave us in the dilemma that despite information apparently being more readily accessible and available than it ever has been in the history of mankind, our tools for coping with that information and for assessing it are actually very limited. So we would avoid a great deal of foolishness in society with great gain, great advantages, if people understood even the basics of statistics. And I'm afraid most of us don't.

And this idea that statistics are for a special cadre of people or that you require some great knowledge or learning to understand statistics, in my view, is a significant drawback. I think statistics need to be presented as just another component of knowledge. Few of us will gain any great skill in statistics, but many of us can gain a knowledge of the basic concepts of statistics that will enable us to filter and assess information. Because the system of assessing and filtering information is something that statisticians do, something that scientists do, and it's something that lawyers do or should do and I suspect don't do sufficiently or often enough.

I want to then just look at these ideas in the context of the EU and where we are in terms of the UK withdrawal from the EU, that has some legal dimensions that I come to in a moment. In the UK, the Office for Budget Responsibility has said that a no-deal Brexit would add a further 2% drop on top of the economic impact of the virus next year. That would result in more than 300,000 job losses, 0.9%, on top of nearly one million more people who are expected to be unemployed next year because of the virus. This, of course, raises the problem as to what is meant in truth by getting Brexit done, this great mantra. Prime Minister Johnson says the UK will "prosper mightily with no deal", which he calls 'trading under Australian terms'. But if we probe the statistics, what it really means by Australian terms is trading on the basis of the World Trade Organisation terms. Australia sent a mere 3% of its exports to the EU in 2019, so that doesn't harm Australia that much. But the UK exports 46% of its exports to the EU. So if you consider the statistics, the mantra that we will prosper mightily looks a little bit more threadbare and doubtful. The market in which Australia is engaged most is with the Chinese market, where 38% of its exports go. That, in turn, is problematic because it is subject to the whims of the superpower. And as you know, in the last few weeks, China has exerted its power by slapping tariffs on various Australian goods, on barley, carrying out an investigation into what it called a wine lake that's been dumped by Australia in China due to its perceived closeness in support of the US and Western governments. So the US government, in its own estimate of a no-deal Brexit trade deal, which it doesn't talk about that much, estimated an impact of 8 percentage points of lost domestic product over 14 years relative to staying in the EU, and that might amount to halving cumulative growth in GDP per head over that period. In turn, the free trade agreement it seeks would cost 5 percentage points of GDP.

One of the big issues is fishing, although fishing only generates 0.04% of UK gross value added. The "level playing field" that the UK object to must also be put in context with reference to the statistics. In fact, the UK is one of the lowest spenders in the EU in state aid terms, Germany being one of the biggest, so actually objecting to a level playing field represents a relatively small trade restraint in economic terms though it's considered a very considerable restraint in sovereignty terms. Prime Minister Johnson speaks about the UK should be treated like Canada, but the EU's imports of goods from the UK are ten times those of Canada. So what we get are mantras that most of us are unable to assess what is behind them, what do they mean and what is their relevance. It is statistics that can help us pierce that veil of ignorance and inform us.

If you then look at the Brexit Withdrawal Agreement in that context, Article 16 of which provides that if the Ireland/Northern Ireland Protocol leads to serious economic, societal, or environmental difficulties that are liable to persist or to a diversion of trade, the EU or the UK may unilaterally take appropriate safeguard measures. But the safeguard measures it may take are set out in the procedures in the Withdrawal Agreement under the Procedures in Annex 7, which involve a balanced and proportionate approach based on evidence and based on statistics.

So when the UK introduced its Brexit Bill that provided a unilateral entitlement of ministers to deviate from the Withdrawal Agreement, that was said to protect UK's interests, but UK's interests were protected by the international agreement to which they were bound, and they were not entitled to introduce a unilateral method to deviate from that agreement or to break that agreement. And of course, the reason you have these provisions in an agreement and that you have an evidence-based assessment of whether there is an undue or disproportionate

burden is that that is ultimately going to be based on an evidence-based analysis, which is going to involve, in this context in particular, statistics and statistical evidence.

I then want to look perhaps more closely about how statistics are relevant in a court context, but it's more than that because the rule of law plays an essential role in society and the rule of law is ultimately only as good as the quality of the laws. And in a common law jurisdiction, the quality of the laws is informed by the decision making of judges. And the decision making of judges must be based not on gut instincts, but on proper analysis. Proper analysis, in many cases involves a consideration of statistical evidence to establish how particular cases are to be determined and also more broadly, to establish principles that inform the assessment of validity of laws on occasions.

Statistical evidence is, of course, something that may be influenced as objective but it may be influenced by subjective biases. And that's something we need to understand. There's a famous study by Babcock and Lowenstein which ran an experiment with participants who were given evidence in a real court case about a motorbike accident. And one participant was given the plaintiff's brief to get as much damages as possible, and the other participant was given the defendant's brief to reduce the damages and say there was no liability. They were then presented with the actual facts of the case and they were asked how or what would be the likely outcome. And it transpired, instead of assessing that on an objective basis, their assessment was influenced by the roles they had previously played. And that is something that we need to guard against in assessing the quality of evidence more generally and in assessing statistical evidence that may be relevant in cases.

I want to finish briefly with an identification of a number of cases where evidence has been assessed, statistical evidence, and has played an important role. The first is an Irish case, DPP and Connolly, where a Dr Casey from the Forensic Science Laboratory, gave evidence with regard to the probability that at least seven out of 10 packets did contain amphetamines, though she had only examined five of those. And the court accepted having regard to her experience, that she could properly arrive at that analysis. She gave evidence, however, that the purity of the packages she assessed were between 10 and 40 percent in purity and that that same percentage would apply to those packages she had not assessed, the court rejected that because they weren't satisfied that she had a proper statistical or quantitative basis for that assessment.

There is then what's known as the Prosecutor's Fallacy, and that has been demonstrated in the case of R vs. Clarke, where a pathology expert appearing for the prosecution testified that the probability of sudden infant death syndrome in one family matching the Clarke's profile was 1 in 73 million. And the implication was the event was so improbable that it was at the very least suspicious. But in fact, the figure of 1 in 73 million is the probability that two deaths in one family will occur among infants, where none of them is killed unnaturally. So once the two deaths in the case occurred, the one in 73 million figure told us nothing about the statistical probability that the deaths were, in fact, unnatural. That's called the prosecutor's fallacy. There is also the ecological fallacy, which occurs when an inference about a specific individual and group in an ecological study based on the property of that group is then transferred to an assessment of an individual case.

Those are matters that you will all be familiar with and you will be familiar with the increasing use of statistical evidence to determine issues as to whether it is a discrimination, to determine causation, to determine whether survey evidence is admissible, if the survey evidence itself is containing statistical evidence. And finally, in the context of the laws, particularly in specialist areas like regulation - competition law, financial regulation, regulation in the area of telecommunications - all of those require informed statistical information. And the application of those regulations, in turn, are informed by proper based statistical evidence properly assessed.

So I leave you with just a strong view that I hold, that the importance of statistical evidence is fundamental to an informed assessment of issues and challenges that face us in society in general and in the legal sphere. And it is so important that people know that and understand the basics of statistics so that we can get the best from the science that you offer and that your Society espouses. We can achieve not just a symphony between jurisprudence and statistics at a general level, but a symphony between knowledge, the assessment of knowledge, information and decision making, whether it be in the scientific, the jurisprudence, or the broader economics of societal spheres.