Ahead by a Century: Tim Edgar, Machine-Learning, and the Future of Anti-Avoidance

Benjamin Alarie*

PRÉCIS
L’apport de Tim Edgar à notre compréhension de l’évitement fiscal et de la lutte contre l’évitement fiscal demeure en avance sur son temps. Dans cet article, l’auteur fait valoir que les travaux de Tim Edgar sur l’élaboration de meilleures règles générales anti-évitement (RGAE) étaient particulièrement prescients, car ils étaient justes dans leur affirmation voulant que l’évitement fiscal puisse et doive être éliminé par des mesures anti-évitement efficaces. L’auteur soutient que la position et la vision de Tim Edgar se réaliseront éventuellement, mais que Tim Edgar lui-même ne savait pas comment cela allait se faire. L’auteur affirme tout d’abord que le droit est incomplet, ce qui rend difficile d’insister sur l’adoption immédiate de mesures anti-évitement strictes. L’auteur explique comment et pourquoi le stade actuel de développement du droit est loin de préciser entièrement le droit, y compris le droit fiscal. Il affirme ensuite que nous verrons dans les prochaines décennies des approches beaucoup plus complexes et efficaces au développement du droit. Sont décrits, en termes généraux, certains des mécanismes par lesquels nos systèmes fiscaux évoluent vers une singularité juridique (un état du droit qui est fonctionnellement complet et bien défini). L’auteur expose ensuite les implications de ses deux principales affirmations pour l’avenir des RGAE et de la lutte contre l’évitement fiscal — en particulier, comment la réalisation d’un système juridique beaucoup plus complet ne laissera effectivement plus de place à l’évitement fiscal. Le droit fiscal, dans la réalisation asymptotique des travaux et de la vision de Tim Edgar, deviendra bien ciblé et pourvu des moyens pour lutter contre l’évitement fiscal. L’évitement fiscal comme nous le connaissons cesserà d’exister.

ABSTRACT
Tim Edgar’s contributions to our understanding of tax avoidance and anti-avoidance remain ahead of their time. In this paper, the author argues that Edgar’s work on building better general anti-avoidance rules (GAARs) was particularly prescient — correct in its claim that tax avoidance can and should be eliminated through effective anti-avoidance measures. The author maintains that although Edgar’s position and vision will eventually

* Osler Chair in Business Law, University of Toronto.
be realized, Edgar himself did not anticipate the manner in which this would occur. The author’s first claim is that the law is incomplete, and this incompleteness problematizes any insistence on the immediate adoption of strict anti-avoidance measures. The author explains how and why the current stage of legal development falls significantly short of completely specifying the law, including the tax law. The author’s second claim is that the next decades will bring considerably more sophisticated and effective approaches to legal development. Described, in broad terms, are some of the mechanisms through which our tax systems are moving toward a legal singularity (a state of the law that is functionally complete and well specified). The author proceeds to outline the implications of his two main claims for the future of GAARs and anti-avoidance—specifically, how the realization of a much more complete system of law will leave effectively no further scope for tax avoidance. Tax law, in the asymptotic realization of Edgar’s work and vision, will become well targeted and well equipped to address tax avoidance. Tax avoidance as we know it will cease to exist.

**KEYWORDS:** GAAR ■ ANTI-AVOIDANCE ■ TAX AVOIDANCE ■ EFFICIENCY ■ TAX POLICY ■ DIGITALIZATION

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**INTRODUCTION**

The contributions of Professor Tim Edgar (1960-2016) to our understanding of tax avoidance and anti-avoidance remain ahead of their time. In this paper, which I dedicate to his memory, I argue that in his academic work on the building of better general anti-avoidance rules (GAARs), Edgar was “ahead by a century.”

My contention in this paper is that Edgar was correct in his claim that tax avoidance can and should be eliminated through effective anti-avoidance measures.  

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2 “Ahead by a Century” is a reference to the 1996 song of that name on the album *Trouble at the Henhouse*, by the Canadian rock band The Tragically Hip. The band’s lead singer, Gordon Downie (1964-2017), battled terminal illness contemporaneously with Tim Edgar (1960-2016); they passed away within months of each other. I believe that Tim would appreciate the reference.

3 In adopting this position, Tim Edgar was no doubt influenced by his colleague at Western University and long-time proponent of the Canadian GAAR, Brian Arnold. See, generally, Brian J. Arnold, “Reflections on the Relationship Between Statutory Interpretation and Tax Avoidance” (2001) 49:1 *Canadian Tax Journal* 1-39; and Brian J. Arnold, “The Long, Slow, Steady Demise of the General Anti-Avoidance Rule” (2004) 52:2 *Canadian Tax Journal* 488-511. Much of the argument here would also apply to the positions that Brian Arnold has taken on GAAR over the years.
In his most prominent article on the subject of tax avoidance and GAARs, Edgar asserted that “tax avoidance should be viewed as a negative externality, and externality theory suggests appropriate policy instruments that can be used to eliminate the consequential attributes of avoidance behavior.” Later in the article, he took this point further, stating that “[t]he consequential attributes of all tax-avoidance behavior require a response of some sort intended to eliminate such behavior.”

I argue in this paper that Edgar's position and vision will eventually be realized but that Edgar himself did not anticipate the manner in which his views will be vindicated. Any effort to foresee where tax law will lead with respect to GAARs and anti-avoidance will probably produce only a very abstract vision. Nonetheless, that is my aim in this paper.

My central thesis—that the future of law will vindicate Edgar's views on tax avoidance—depends on two subordinate claims. The first is that tax law is currently woefully incomplete, thus seriously threatening the integrity of Edgar's vision. Legal scholarship in general underappreciates how tax law's incompleteness undermines the view that tax avoidance can and should be eliminated. This is certainly not because the view is flawed in principle. Instead, the lack of appreciation is related to the absolute nature of the view and to the fact that it is not predicated or conditional on the underlying state of the development of tax law. Owing to the law's incompleteness, I do not believe that Edgar's view has ever truly been borne out (at least not yet). The law's incompleteness and the inevitable perception that governments are taking half-measures to combat tax avoidance generally account for the frustration of many academics and commentators with respect to tax avoidance.

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5 Edgar, supra note 1, at 833.

6 Ibid., at 838.

7 Currently, it seems almost certain that we cannot anticipate accurately how the law will evolve, either. It is likely to occur in fits and starts, like biological evolution. Consider the debate, in the research on evolution, between the “jerks” (who argue that punctuated equilibria often led to relatively rapid shifts in species, from a geological perspective) and the “creeps” (who argue that speciation took long periods of time during which there were relatively gradual changes). Refer to the description of “Punctuated Equilibrium,” Wikipedia (https://en.wikipedia.org/wiki/Punctuated_equilibrium).


9 See, for example, Allison Christians, “Avoidance, Evasion, and Taxpayer Morality” (2014) 44 Washington University Journal of Law and Policy 39-60, at 43 (https://ssrn.com/abstract=2417655): “One possibility is that governments cannot prevent this behavior; the other is that they can do so but choose not to for political reasons”; and David G. Duff, “Tax Avoidance in
My criticism of the unqualified view that all “tax avoidance is necessarily undesirable” is similar to the criticisms levelled at those who insist that breaches of contract are necessarily immoral and repugnant. (It is dubious whether and to what extent a decision to breach and pay damages in contract law is morally offensive.) The position that I advance here also draws inspiration from Michael Trebilcock’s work on tax avoidance and from Ian Ayres’s work on options in law and with respect to the structure of legal entitlements. However, despite the persuasiveness of the case based on the incompleteness of the current law, not all is lost in the long run for Edgar’s view.

The second claim supporting the thesis of this paper is that the remainder of the 21st century will see a marked improvement in the design, specification, implementation, and administration of our tax and legal systems. Elsewhere, drawing inspiration from the late-19th-century insights of Oliver Wendell Holmes Jr. and the more recent insights of John Rawls, I have made the case for the emergence of a “legal singularity”—in other words, a state of the law that is functionally complete and well specified. This condition will be achieved through more sophisticated theoretical and empirical approaches to studying the past, understanding the present, and predicting the future. The process will proceed in fits and starts.
will harness the insights gleaned from superior theoretical and empirical methods to create and administer legal approaches that, viewed from a public policy perspective, are ever more optimal—for example, more sophisticated rules, standards, and institutions. Over the next few decades, we will grow accustomed to vastly more sophisticated methodologies for filling in the gaps in those rules and standards, and we will embrace more evidence-based, nimble, and responsive law-making and law-enforcing institutions. New kinds of policy instruments will be made possible through technology. We will become much better at identifying the optimal objectives for public policy and at adopting and implementing the means for realizing those objectives.

The remainder of this paper comprises four parts. To begin with, I present the first claim—that the law is incomplete and that this incompleteness problematizes any insistence on the immediate adoption of strict anti-avoidance measures. In the process, I explain how and why the current stage of legal development falls significantly short of completely specifying the law, including the tax law. In the next part of the paper, I present the second claim, which is that we are going to unlock considerably more sophisticated and effective approaches to legal development over the coming decades. In presenting this second claim, I describe in broad terms some of the mechanisms through which our tax systems are moving toward a legal singularity. In the third part of the paper, I describe these two claims’ implications for the future of GAARs and anti-avoidance. More specifically, I explain how the realization of a much more complete system of law will leave effectively no further scope for tax avoidance; tax law, in the asymptotic realization of Edgar’s work and vision, will become well targeted and well equipped to address tax avoidance.

CLAIM ONE: TAX LAW IS INCOMPLETE

Edgar’s claim that tax avoidance is wholly undesirable presupposes and depends on the existence of a complete and properly specified system of tax law (a perfect or near-perfect system). If such a complete system were our point of reference, we would be prepared to accept the claim that tax avoidance—viewed from the consequentialist perspective preferred by Edgar—is necessarily undesirable. (We would accept this claim cautiously, however, since such a system would require significantly more legal development in every respect than is currently the case.) With such a perfect system in place, any deviation from the pattern of tax liability established by tax law would presumably result in private benefits to the tax avoider, and there would be, by definition, insufficient countervailing public policy rationale or justification.18 To establish that not all tax avoidance today is necessarily undesirable from a consequentialist perspective, I must demonstrate that the world’s current systems

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18 On the other hand, in a perfect tax system, any such “tax avoidance” would be justifiable because of what it secures in terms of non-tax policy benefits. On how loopholes result from multicriterial tradeoffs in policy settings, see Leo Katz, “A Theory of Loopholes” (2010) 39:1 Journal of Legal Studies 1-32.
of tax law are incomplete and, in meaningful ways, far from optimal. I suspect that tax academics and practitioners alike will find this claim all too easy to accept.

Curiously, it was the practical shortcomings of the way in which GAARs generally target and address tax avoidance that prompted Edgar to make his claims about the inherently disagreeable nature of tax avoidance. GAARs’ deficiencies motivated Edgar to support policy makers in developing theoretical insights that could be used, in turn, to suggest methods for improvement. It is worth pointing out, however, that the same kinds of legal processes and pressures that produce GAARs—including the inevitable pressures from the political economy, which de-fang and blunt the rules—also generate the rest of our tax law (and, of course, law more generally). This fact leads Edgar’s view inescapably into a challenge of sorts: the design and implementation of GAARs that he found so wanting are typically layered over incomplete and perhaps even more unsatisfactory tax and legal systems. To make the point a different way, a perfectly targeted, “Edgar-approved” GAAR layered on top of a highly imperfect tax and legal system is like putting lipstick on a pig. A wide variety of explanations exist, of course, for how and why the current tax and legal systems remain imperfectly designed and specified. These explanations cite, inter alia, the difficulty of path-dependency in the law, incomplete information, limits to human cognition, the difficulties of coordinating numerous tax sovereigns with conflicting national and subnational interests, technological limitations, corruption, agency costs, the various frictions associated with non-state political economy considerations, and the fundamental issue of scarcity of time and resources. Reflecting on the origins of GAARs’ infirmity could very well lead to skepticism about the nature and propriety of the tax and legal systems on which GAARs are based, and could easily lead to disillusionment about the efficacy of efforts to combat tax avoidance. To his credit, despite these challenges, Edgar did not lose sight of the goal of effective anti-avoidance.

Incompleteness is pervasive in law, a feature not only of the common law, such as tort and contract law (which depend critically on new judgments to drive legal development), but also of the law in general, including tax law. Referring to tax law as “incomplete” is not meant as a normative criticism or critique (though it might be taken this way); instead, my claim is—as was Edgar’s, in this respect—a positive one. The incompleteness that I refer to is understandable, given the current state of our overall legal development and technology. The relatively static nature of the current statutory, regulatory, and administrative approach to tax law (and other

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19 I describe below what I mean by a “complete” system of tax law.

20 More on this below.


areas of law) means that this law cannot specifically and proactively address every potential future contingency in an optimal way. These challenges were considered directly in the design of the UK GAAR, which was criticized for being both too narrow and too broad.\textsuperscript{23} Consider also the challenges that the Organisation for Economic Co-operation and Development’s (OECD’s) base erosion and profit-shifting (BEPS) project have encountered since work began in 2013, despite ostensible widespread adoption across the Group of Twenty (G20).\textsuperscript{24}

I am not criticizing tax law alone for being incomplete and imperfect. Tax law reflects our current level of development in various dimensions (for example, legal, social, political, and technological), and incompleteness is a pervasive feature of every area of law. The mission and professional responsibilities of lawyers, judges, and legal academics include the basic obligation to help support the law’s further development and refinement. We pretend that our legal development is sufficient, but in reality the law is significantly underspecified. This is not because we lack individuals and institutions willing to do the hard work to improve it (although many benefit by slowing its improvement). It is largely because (1) our techniques and methods for improving the law remain slow and crude; (2) we can have only limited confidence in our ability to craft improvements, given the limits to our knowledge and understanding; and (3) the legal system involves many aspects that work interdependently, like a Rubik’s cube—any change to one aspect will affect many others. This complexity, path-dependency, and interdependence make change difficult, so we tend to prefer and undertake the gradual and incremental over the bold and potentially better and more effective.

Consider the common law.\textsuperscript{25} To determine liability for negligence in the tort context, we rely on ex post notions of what would have been “reasonably foreseeable” to a “reasonable person” in a particular setting, and we do so to determine whether a defendant might be said to have met the required “standard of care” in satisfaction of a duty of care to a plaintiff. To provide practical guidance on these kinds of questions is difficult and at best uncertain, for a wide variety of reasons. In the context of contract law, legal incompleteness is also widely acknowledged and accepted. It is well known that contracts are virtually always incomplete; parties


\textsuperscript{25} In the common law, Lord Denning is sometimes celebrated as a maverick, willing to go beyond the merely gradual and incremental in order to improve the law through bold reforms that played fast and loose with the usual methods of the common law. See, for example, the introduction (“The Obituaries of Lord Denning”) in Charles Stevens, The Jurisprudence of Lord Denning: A Study in Legal History, Volume III, Freedom Under the Law: Lord Denning as Master of the Rolls, 1962-1982 (Newcastle: Cambridge Scholars Publishing, 2009), at 1.
simply cannot foresee and address every potential future contingency.\footnote{26} Indeed, contract scholars accept that contracting parties can never succeed in negotiating a set of terms appropriate for governing every potential outcome.\footnote{27}

A tort or contract law student from a century ago would be perfectly at home in many law school classrooms in 2020; he or she would be reading many of the same cases and making similar arguments about hypotheticals that would seem natural and would be readily grasped. The private law has made progress over the past century, of course, particularly in theoretical and empirical studies of the consequences of its various aspects, but the way in which a representative law student, lawyer, legal academic, or judge interacts with the private law has changed little, save perhaps in that a greater number of statutes now, especially with respect to consumer protection, affect private-law determinations.

Law’s incompleteness is not an easy problem to solve. Indeed, we resort to the incomplete notions that pervade the private law because experience with the messiness of the real world teaches us that it is too difficult to specify in complete detail what is or is not in a particular legal category ex ante. This issue has given rise to the literature regarding the choice of rules versus standards.\footnote{28} As this literature points out, we are generally more confident in judges’ ability to reach defensible after-the-fact decisions as to whether a particular situation satisfied certain requirements in a particular setting than we are in our ability (or the ability of a legislature) to specify beforehand a set of complex and exhaustive rules stipulating what should be ruled in and what should be ruled out. And such incompleteness is not only an aspect of private law. Incompleteness abounds in public law as well. For example, with respect to the difficult-to-articulate legal category of obscenity, US Supreme Court Justice Potter Stewart famously remarked, in his concurring opinion in \textit{Jacobellis v. Ohio},\footnote{29} that “he knows it when he sees it.”\footnote{30} There exist many such examples of the challenges of completely specifying the boundaries of legal categories in private law and public law. Tax law inevitably shares in this incompleteness. Indeed, many commentators have grappled with\footnote{31} and taken issue with the Canadian GAAR because of the imperfect identification of what ought to be classified as “misuse” or “abuse”


\footnote{30} Ibid., at 197. The complete quote is, “I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description [of obscenity], and perhaps I could never succeed in intelligibly doing so. But I know it when I see it, and the motion picture involved in this case is not that.”

for the purposes of subsection 245(3) of the Income Tax Act.\textsuperscript{32} Given the incompleteness of the law, it can be quite a challenge to identify a clear policy objective associated with particular provisions or sets of provisions that may (or may not) have been drafted in a coordinated manner.

A more complete law is possible. I use the word “complete” in this context to describe a system of law (specifically, tax law) that exhibits three key characteristics: it is well designed, well specified, and administered effectively.

A complete tax system demonstrates “optimized design”; that is, it is well designed and optimized to allow appropriate tradeoffs among the many competing public policy goals that the tax system implicates. It allows these tradeoffs through appropriate rules, functional standards, and reliable legal methodologies for addressing gaps. For the tax system to be well designed and optimal in this sense, a number of things are required, at a minimum: the input and sophistication of many different kinds of experts (for example, empiricists, economists, accountants, philosophers, lawyers, and social scientists of all stripes), robust public debate, a process for capturing and implementing the results that is immune to capture by special interests, and testing—lots and lots of testing. The life of the law has not been (and will not be) logic; it has been (and will be) experience.\textsuperscript{33}

The second characteristic of a complete tax system (according to my meaning of “complete”) is that it is well specified, in the sense that questions about whether and how particular rules and standards apply to any given situation can consistently and reliably be answered (allowing “deep specification”). Deep specification is present in a tax system when its characterization of such elements as transactions, events, and entities is consistent, aligned with that system’s optimized public policy design, and resistant to being gamed by the taxpayer.\textsuperscript{34}

The third aspect of a complete tax system is that it is administered effectively. By “effective administration” I mean that its design and specific elements are capable of being consistently and reliably applied, and that the administration of the system involves a minimum of mistakes (that is, the system is able to avoid false positives and false negatives). Arguably, of course, our current method of providing such consistency is to rely on tax administrations, judges, and our court systems.\textsuperscript{35} This is a
cumbersome way to achieve effective administration, and it is only partially effective. This method works in some circumstances, but, given its costs in time and financial resources (not to mention the fact that it produces too many false positives and false negatives), it is an imperfect way of realizing the aims of the tax system.

Given the ways in which tax law and policy have continued to evolve in our current state of legal development (which is itself a result of our current technological and institutional limitations), the state of our tax law systems today, in Canada and around the world, clearly falls short of meeting a standard of “completeness” that exhibits optimized design and deep specification. In the next part of this paper, I explain the mechanisms that will help to guide law—and tax law, specifically—in the direction of greater completeness.

CLAIM TWO: TOWARD A “LEGAL SINGULARITY” IN TAX LAW

The recognition that tax law has been and continues to be incomplete is the basis of my claim in this paper that not all of what is currently regarded as tax avoidance in our current system of taxation is necessarily undesirable from a social welfare perspective. This claim is in tension with Edgar’s view that the “consequential attributes of all tax-avoidance behavior require a response of some sort intended to eliminate such behavior.” 36 The primary aspirations for tax law and policy, in my view, should be to hasten as much as possible the advent of a more complete and effective system of tax law. A tax system that approaches completeness will not include the pitfalls and windfalls that we see littered throughout the imperfect patchwork of tax systems today, interacting with underlying legal systems that are less than ideally defined.

Tax-avoidance behaviour will naturally diminish in practical importance over the next century as tax law (and the legal system generally) becomes progressively more optimal in its design, and complete in its specification. Perhaps it is risky to argue teleologically, as I do here, that tax law will continue to improve, though I believe that history supports such a view. A review of the past few centuries or even of the 20th century alone suggests that this argument is not unreasonable. For example, the income tax systems in Canada and the United States are just over a century old and have undergone highly significant changes over that period.37 Tariffs and excise taxes have become vastly less important to public finances in OECD nations. Value-added taxes, first introduced in France in 1954, have become well established throughout the OECD member states (with the exception of the United States).38 Given the rapid development of new methods of taxation, it is...
abundantly reasonable to expect that these and other kinds of taxes will continue to develop apace.39 Indeed, many areas of law have undergone rapid development over the past century.

A functionally complete legal system, as I have suggested above, is one in which we have achieved a condition of “legal singularity.”40 A careful reading of Edgar’s work on the development of a more target-effective GAAR suggests that he would agree in principle that legal singularity would solve the tax-avoidance problem as he saw it: such a complete tax law would, by definition, capture as tax revenue what would be optimal to capture and would leave untaxed what ought not to be taxed. Indeed, a functionally complete tax system would achieve precisely the sort of effective targeting that Edgar viewed as the desirable consequence of a well-designed GAAR.41 In this respect, therefore, the views that I advance here are consistent in spirit and direction with those animating Edgar’s contributions to the discussion.

A legal singularity will not emerge entirely spontaneously. Considerable effort and investment are required for a full understanding of how individuals and firms respond to taxes and how the tax law influences decision making and behaviour. Academic work, particularly empirical work on the consequences of various tax policies, continues to accumulate. In the context of empirical tax research in public economics, the National Bureau of Economic Research’s (NBER’s) Public Economics Program produced increasing numbers of papers in the three-decade period ending in 2010: 398 papers in 1990, 665 in 2000, and 1025 in 2010. A growing proportion of these papers were empirical in nature—29.1 percent in 1990, 46.4 percent in 2000, and 52.5 percent in 2010.42 With respect to empirical tax research in the accounting field, Douglas Shackelford and Terry Shevlin canvassed the growth of empirical literature in the 15 years leading up to 2001, including over 200 separate papers in their survey, and they concluded, “We are encouraged by the rapid progress of the field in the last few years and look forward to further research enhancing our understanding of the role of taxes in organizations.”43 And there are indications that empirical tax research in accounting has increased significantly since 2001. For example, newly available administrative data have, over the past two decades, considerably increased researchers’ ability to address certain issues.44

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39 For a sophisticated attempt to outline what further changes to our tax systems could look like, including a greater reliance on wealth and wealth-transfer taxes, see Piketty, supra note 21, part 4, “Rethinking the Dimensions of Political Conflicts.”

40 Ibid.

41 See Edgar, supra note 1, at 852.


addition, positive signs now suggest that empirical methods will allow academic researchers to gain considerable insight into the effects of the 2017 US tax reform.45 All of this research increases our collective understanding and brings us incrementally closer to more effective systems of taxation.

Perhaps the idea of a legal singularity in tax law will sound fanciful to readers of this paper. What are the mechanisms through which tax law will evolve toward this more complete condition of the future? Indeed, how can I justify this claim that mechanisms will emerge to produce a tax system more optimal, robust, and resistant to being gamed than the current system? A number of such mechanisms, in addition to the theoretical and empirical work outlined above, are likely to be in play, and most of them will be clear and familiar enough (or at least reasonably imaginable now); other, less imaginable mechanisms will also emerge. A framework for identifying at least some of these different mechanisms would be helpful, though I cannot claim to have identified adequately the various influences.46 Time will tell.

An initial distinction could be made between, on the one hand, those mechanisms that operate within and internally to the system of tax law (call them internal mechanisms), and, on the other hand, mechanisms that operate on this system in a more direct, explicit, and external way (call them external mechanisms). Internal mechanisms elaborate, stretch, and extend the tax law system to address issues that have not been explicitly addressed ex ante. The majority of the legal academic work in taxation and the work of the courts and tax practitioners would fall into the internal mechanism category. This is the work that strives to connect and integrate the sometimes arcane and technical aspects of tax law with the messy reality of the lives of individuals and families and the realities of firms and businesses.

External mechanisms, by contrast, modify or patch the source code of the tax law system. Much of the academic work in public economics and tax accounting could best be classified as feeding into the external mechanisms affecting the evolution of tax law; these studies give policy makers insight into the likely consequences of various policy options and directly and indirectly influence changes to substantive tax law through the legislative drafting process and the development of regulation. Ultimately, I expect that the distinction between these internal and external mechanisms will be less sharp than I portray them here.47 The next few decades will see the emergence of much better endogenous methods enabling the tax law to improve itself in a dynamic way through the development and deployment of new technologies in our legal system.

45 Ibid., at 443.
46 Because of my imaginative limitations, this is an incomplete and highly imperfect list. I cannot purport to offer a complete inventory.
47 An example of a work that crosses over is that of Thaddeus Hwong and Jinyan Li in this issue, in which the authors conduct a transnational empirical study of GAAR judgments in order to suggest reforms to GAARs. See, elsewhere in this issue, Thaddeus Hwong and Jinyan Li, “GAAR in Action: An Empirical Study of Transaction Types and Judicial Attributes in Australia, Canada, and New Zealand.”
The internal mechanisms for the improvement of tax law begin where the statutory materials end. Thus, the internal mechanisms for improving the completeness of tax law are the conventional ones involving the administrative state, courts, and the resolution of taxpayer disputes. The administrative state is tasked with supplying rules and regulations that flesh out and specify the details that elaborate on the statutory source materials. Administrative bodies provide dispute resolution and can also provide guidance on what may or may not be acceptable from a tax law and policy perspective, subject of course to the overriding discretion of the courts. In the event of a dispute between a taxpayer and the tax administration about the application of tax law to a particular situation, the courts provide a mechanism for resolving those disputes in the form of the conventional methods of fact-finding, statutory interpretation, and legal analysis. And, of course, there are avenues for appeal to higher courts, as applicable. All of this is perfectly conventional and familiar.

Technology has been and will continue to influence the speed with which these internal mechanisms contribute to the completion of tax law. Historically, the most natural way in which technology has accelerated these processes is by making legal information available more quickly. The traditional technology for this was print. Extensive physical tax libraries were a feature of many tax practices until not so long ago. Many still find physical copies of tax legislation indispensable. More recently, the emergence of online research has made even more information available far more quickly than before. This movement from analogue to digital legal information has quickened the pace at which tax law can internally be elaborated through mechanisms that propagate information. The digital availability both of tax cases from tax and appellate courts and of tax statutes and regulations has made navigating the tax system easier for taxpayers and their advisers than ever before. Even seemingly simple advances such as automated checklists of things to consider before taking a particular tax position constitute materially important advances in the internal mechanisms for improving tax law.

Predicting what the tax law requires by predicting what courts will actually do is a key component of what lawyers do. We know that in many fields, algorithmic approaches to prediction work better than human judgment alone. It is reasonable to expect that in the near future, data-driven approaches to the law and algorithmic assessments of risk will become commonplace in the legal-services industry, despite some resistance to change in this industry. The next step in the development of the internal mechanisms that will propel the tax system to greater completeness has already begun. Machine-learning systems are now able to synthesize the legal information from, among other sources, legislation, case law, regulations, and administrative rulings; and to provide insight into what current law is apt to require. These systems do this by anticipating and predicting what would happen if a particular set of facts and circumstances were to be considered in the judicial process, using past tax administration rulings and court decisions as training data. These methods, now in their infancy, will continue to increase the speed, internal consistency, and reliability of our tax law systems. Machine-learning technology, which already produces excellent results in circumstances where accurate predictions would previously have
been considered too difficult, will continue to develop. The ability to collect, store, process, and analyze data will continue to improve exponentially. If Moore’s law holds, computing power can be expected to double, on average, every two years. If growth continues at this pace, computing capabilities will have increased more than 100,000-fold by the year 2050. Innovations in machine-learning and artificial intelligence will yield powerful insights about tax law from the inside—providing new tools for taxpayers and their advisers to understand the current and likely future state of tax law.

Naturally, tax-avoidance opportunities exist where there are mismatches, inconsistencies, or ambiguities in our tax law systems. Not all of the work required to reconcile these systems in a body of tax law can be carried out through internal mechanisms. These new digital and computational methods of identifying the limits of the consistencies are also leading to the accelerated development and propagation of tax-avoidance strategies. This development, in turn, encourages legislatures to address, through external changes to the source code of tax law itself, the deficiencies identified through the internal mechanisms discussed above. How do these external mechanisms work?

A recent study has considered the use of reinforcement learning in taxation models to better optimize tax systems for efficiency and fairness.\(^{48}\) The authors claim to have identified improved tax policies by using a simulation that includes agents relying on reinforcement learning.\(^ {49}\) With respect to productivity and equality, these policies are a significant improvement on policies derived from an alternative tax approach based on Emmanuel Saez’s work in the optimal tax literature.\(^ {50}\) I cite this recent tax optimization research (of which there is doubtless much more to come) mainly to suggest that our current tax and legal systems have significant room for improvement. We have not yet achieved a final optimal design that would enable us—and indeed compel us, in the interests of good public policy—to strictly enforce the system’s rules; the state of our legal development is provisional, evolving, and as yet incomplete and imperfect.

External efforts at improving the tax law are influenced not only by the theoretical and empirical academic work in public economics, tax accounting, and the legal academy, but also by, for example, voters, non-profits (such as the Canadian Tax Foundation),


\(^{49}\) See ibid., at 3: “The AI-driven tax policies make use of different kinds of tax rate schedules than those suggested by baseline policies, and our experiments demonstrate that the AI-driven tax policy can improve the trade-off between equality and productivity by 16% when compared to the prominent Saez tax framework.”

industry organizations, politicians, political parties, and non-governmental organizations.\textsuperscript{51} Of course, the imperatives of fiscal policy and of financing government itself probably provide the greatest impetus for further development of the law through direct changes to tax legislation.

In the long run, tax law will reach functional completeness through these internal and external mechanisms. For now, however, the tax law is incomplete. This incompleteness means that taxpayers must often proceed without knowing for certain how the gaps in the tax law will be filled by tax policy makers, tax administrators, and (if it comes to that) judges. These various groups may not agree on whether and how our incompletely specified tax law will apply to the taxpayer’s situation. Indeed, because taxation at the point of interpretation and application represents a zero-sum transfer (some would argue a negative sum, given the resources that are consumed in interpreting, applying, and contesting the law), the incentives to take positions based on whether the tax would apply (if you take the position of a tax administrator) or not apply (if you take the position of a taxpayer) are obvious and natural. Nevertheless, given the stakes involved and the arms race between (on the one hand) governments seeking to preserve revenues and (on the other hand) taxpayers seeking to avoid taxation, it is inevitable that significant sums will continue to be invested both in the devising of means to avoid taxation and in continuing to articulate and implement tax law effectively.

In a frequently cited passage of the Supreme Court of Canada’s judgment in \textit{Stubart Investments},\textsuperscript{52} Estey J identifies what is probably the most fundamental mechanism in the further development of tax law:

> These interpretative guidelines, modest though they may be, and which fall well short of the bona fide business purpose test advanced by the respondent, are in my view appropriate to reduce the action and reaction endlessly produced by complex, specific tax measures aimed at sophisticated business practices, and the inevitable, professionally-guided and equally specialized tax-payer reaction. Otherwise, where the substance of the Act, when the clause in question is contextually construed, is clear and unambiguous and there is no prohibition in the Act which embraces the taxpayer, the taxpayer shall be free to avail himself of the beneficial provision in question.\textsuperscript{53}

Ultimately, it is probably this fundamental and familiar dynamic between the taxpayer and the state that will prove to be the key mechanism propelling tax law to ever greater specification, and that will bring about the legal singularity in taxation.\textsuperscript{54}

\textsuperscript{51} For an excellent treatment of the importance of democratic input into the improvement of tax law, see Kim Brooks, Åsa Gunnarsson, Lisa Philipp, and Maria Wersig, eds., \textit{Challenging Gender Inequality in Tax Policy Making: Comparative Perspectives} (Oxford: Hart, 2011).

\textsuperscript{52} \textit{Stubart Investments Ltd. v. The Queen}, [1984] 1 SCR 536.

\textsuperscript{53} Ibid., at 580.

\textsuperscript{54} See Alarie, supra note 17.
IMPLICATIONS FOR THE FUTURE OF ANTI-AVOIDANCE AND GAARS

To this point, I have made two main claims. The first is that the tax law is incomplete, which leads to the imperfect realization of our public policy objectives. The second is that we can expect tax law (and law generally)—through a number of internal and external mechanisms, strongly abetted by technology and the interests of taxpayers and governments—to continue to develop in a way that is increasingly detailed and increasingly optimal in various respects. What does this mean for Edgar’s assertion that tax avoidance is undesirable and that a major objective of public policy should be the elimination of tax avoidance?

Interestingly (and encouragingly), the incompleteness of the law may catch us up in an eddy for some indeterminate amount of time, but it will not divert us from the law’s ultimate downstream destination. Edgar was right about the unsatisfactory performance of past and present GAARs and about the general desirability of improving how tax systems evolve through the use of improved anti-avoidance measures. This is what anchors the lasting contributions of his work. A key point is that the problems with current tax systems extend beyond their GAARs. The problems with GAARs, past and current, are a by-product of significant legal incompleteness, which itself is an effect of our current level of overall legal development.

This incompleteness, in turn, gives rise to the pervasive tax-avoidance possibilities of today. If and when tax law can explicitly (or implicitly) contemplate and address every potential future contingency in a satisfactory fashion, no scope for tax avoidance will remain; in such a world, there will be only compliance or non-compliance (that is, tax evasion). With a complete system of tax law, tax avoidance would be coincident with tax evasion.55 This is the sort of world presupposed by Edgar’s view that all tax avoidance is bad and needs to be eliminated. How does this affect how we should think about anti-avoidance measures generally and GAARs specifically?

All GAARs can be seen as providing short-term workarounds, or “kluges,”56 that serve to mitigate the worst effects of the incompleteness of tax law. According to the “GAARs as kluges” view, a principal role of GAARs is to buy legislatures time and sometimes political will (all too often, alas, not enough of either) to patch deficiencies with more specific and better-designed responses. The GAARs-as-kluges concept would also suggest that sophisticated taxpayers prefer this kind of approach to

55 Note here the connection between tax evasion and The Tragically Hip reference in the title of this essay. The name of the album on which “Ahead by a Century” appears is Trouble at the Henhouse, which is a reference to foxes being put in charge of guarding the henhouse, only to later raid it. I suspect that Tim would have appreciated the allusion.

56 A “kluge” (or “kludge”) is described on Wikipedia (https://en.wikipedia.org/wiki/Kludge) as “a workaround or quick-and-dirty solution that is clumsy, inelegant, inefficient, difficult to extend and hard to maintain. This term is used in diverse fields such as computer science, aerospace engineering, Internet slang, evolutionary neuroscience, and government. It is similar in meaning to the naval term jury rig.”
faster, more proactive, and, perhaps, clumsier legislative responses to tax avoidance. GAARs as kluges are important and indispensable, but they are vital in their current form only until a sufficiently complete tax law emerges.

The emergence of tax law that is sufficiently complete is undoubtedly conjectural and, at best, lies some distance in the future, but it is this progress toward ever better tax law that increasingly strengthens Edgar’s claim that tax avoidance is undesirable and ought to be eliminated.

CONCLUSION

In this paper, I have made the case that the law is incomplete but will become more complete over the coming decades. What are the implications of this argument for Edgar’s views regarding GAARs, and for anti-avoidance measures in the future? In my view, the future will reveal Edgar as having been correct about tax avoidance and anti-avoidance. GAARs will be so deeply reinvented and woven so deeply into the fabric of tax law that they will no longer exist as such (at least, not recognizably). At the same time, as we make continuous progress in the design, specification, and administration of law, including tax law, Edgar’s view of tax avoidance as a negative externality that ought to be eliminated will become thoroughly unassailable. An alluring long-term consequence of such vindication is that, as the design of tax and legal systems continues to be improved, optimized, and finely specified through new approaches, the scope for tax avoidance as we know it today will diminish and, in the end, become practically negligible. Tax avoidance either will not exist at all or will coincide with tax evasion. In the long run, tax avoidance is dead.