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Tax Compliance as a Wicked System

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TAX COMPLIANCE AS A WICKED SYSTEM

by
J. T. Manhire *

ABSTRACT

This Article proposes a new typology and framework for tax compliance systems. Traditionally-competing approaches such as deterrence theory, behaviorist theory, and game theoretic models taken together suggest that tax compliance is perhaps a new type of system—a “wicked system”—that is only partially comprehensible by understanding the traditional theories alone. If correct, previously competing theories become simply different limiting cases of the same underlying “wicked system.” The Article concludes with a discussion of the framework’s limitations and presents initial solutions and challenges for future work.

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I. INTRODUCTION

Mainstream tax compliance theories—namely, deterrence and behaviorist theories—often disagree on the varying degrees of *structural* complexity (or “complicatedness”) of a large, heterogeneous taxpayer population. In their most general forms, these approaches are reductionist in that they seek to explain the activity of the social system by first understanding the (at times intricate) motivations of individual taxpayers and then summing the parts to explain the whole. The so-called “tax compliance puzzle” is a result of predictions from these models not matching observable tax compliance data.¹

Game theoretic approaches imply that this “complicatedness” approach is not enough.² Knowing only the motivations of individual

1. James Alm, Kim M. Bloomquist & Michael McKee, *Comparing Student and Non-Student Reporting Behavior in Tax Compliance Experiments*, in RECENT RESEARCH ON TAX ADMINISTRATION AND COMPLIANCE (I.R.S. Research Bulletin, 2011), <https://www.irs.gov/pub/irs-soi/11resconcompexp.pdf> (finding taxpayers with income that is not subject to IRS information reporting voluntarily comply at much higher rates than predicted by the deterrence theory model); Michele Bernasconi, *Tax Evasion and Orders of Risk Aversion*, 67 J. PUB. ECON. 123, 128 (1998) [hereinafter Bernasconi, *Tax Evasion*] (“This is the puzzle of tax compliance. Although incontrovertible evidence on the extent of tax evasion is hard to obtain, it is clear that not everybody cheats”); Henrik Jacobsen Kleven et al., *Unwilling or Unable to Cheat? Evidence from a Tax Audit Experiment in Denmark*, 79 ECONOMETRICA 651, 652 (2011) (“In other words, taxpayers, despite being able to cheat, are unwilling to do so for noneconomic reasons.”); J. Manhire, *Toward a Perspective-Dependent Theory of Audit Probability for Tax Compliance Models*, 33 VA. TAX REV. 629, 631 (2014) [hereinafter Manhire, *Perspective-Dependent Theory*] (“That experience does not comport with this prediction is a significant problem for the [deterrence theory] model, and is usually referred to as the ‘tax compliance puzzle.’”); see also James Andreoni, Brian Erard & Jonathan Feinstein, *Tax Compliance*, 36 J. ECON. LITERATURE 818 (1998); Mark D. Phillips, *Reconsidering the Deterrence Paradigm of Tax Compliance*, in I.R.S. PUB. 1500, NEW PERSPECTIVES ON TAX ADMINISTRATION: AN IRS-TPC RESEARCH CONFERENCE 99 (2011).

2. See, e.g., Maciej H. Kotowski, David A. Weisbach & Richard J. Zeckhauser, *Audits as Signals*, 81 U. CHI. L. REV. 179, 190 (2014) [hereinafter Kotowski, *Audits as Signals*] (parodying the standard result in law and economics by stating that “once a decade someone should be executed for double parking. This approach to law enforcement is rarely observed and commentators have offered a variety of reasons why it may not be optimal.”); Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968) [hereinafter Becker, *Crime and Punishment*].

taxpayers leads to an incomplete understanding of tax compliance as a societal system. The iterative strategic considerations of taxpayers, the tax authority, employers, tax preparers, and other agents acting in the system indicate that the tax compliance system is a multi-sided problem.³ For example, taxpayer actions become an input to the tax authority's calculus on signaling its audit strength, which feeds back as input (even if partially) to individual taxpayer motivations concerning compliance, which then feeds back (again, even if partially) into other agents' decisions on what strategic action to take. This iterative process is a signature of dynamical complexity (or simply "complexity" for the purposes of this Article) in the tax compliance system. Others have expounded on this notion of tax compliance as "complexity" by introducing simple agent-based computational models in an attempt to explain how multiple components can drive such a system.⁴

3. Other authors have also investigated a "multi-sided problem," primarily dealing with two-sided uncertainty. *See, e.g.*, David P. Baron & David Besanko, *Regulation, Asymmetric Information, and Auditing*, 15 RAND J. ECON. 447, 452–64 (1984); Hsiao-Chi Chen & Shi-Miin Liu, *Incentive Contracts under Imperfect Auditing*, 76 MANCHESTER SCH. 131, 138–48 (2008); Mark B. Cronshaw & James Alm, *Tax Compliance with Two-Sided Uncertainty*, 23 PUB. FIN. Q. 139, 161–63 (1995); Inés Macho-Stadler & J. David Pérez-Castrillo, *Auditing with Signals*, 69 ECONOMICA 1, 10–12 (2002); Arun S. Malik, *Self-Reporting and the Design of Policies for Regulating Stochastic Pollution*, 24 J. ENVTL. ECON. & MGMT. 241, 244 (1993).

4. *See, e.g.*, Luis Antunes et al., *Tactical Exploration of Tax Compliance Decisions in Multi-Agent Based Simulation*, in 7 MULTI-AGENT BASED SIMULATION 80–95 (Luis Antunes & Keiki Takadama eds., 2007); Kim Michael Bloomquist, *A Comparison of Agent-Based Models of Income Tax Evasion*, 24 SOC. SCI. COMPUTATIONAL REV. 411 (2006); Kim Michael Bloomquist, *Multi-Agent Based Simulation of the Deterrent Effects of Taxpayer Audits*, NAT'L TAX ASSOC. PROC. 159 (2004); Kim Michael Bloomquist, *Tax Compliance as an Evolutionary Coordination Game: An Agent-Based Approach*, 39 PUB. FIN. REV. 25 (2011); Jon S. Davis, Gary Hecht & Jon D. Perkins, *Social Behaviors, Enforcement and Tax Compliance Dynamics*, 78 ACCT. REV. 39 (2003); Sascha Hokamp & Michael Pickhardt, *Income Tax Evasion in a Society of Heterogeneous Agents: Evidence from an Agent-Based Model*, 24 INT'L ECON. J. 541 (2010); Adam Korobow, Chris Johnson & Robert Axtell, *An Agent-Based Model of Tax Compliance with Social Networks*, 60 NAT'L TAX J. 589 (2007); J. T. Manhire, *There Is No Spoon: Reconsidering the Tax Compliance Puzzle*, 17 FLA. TAX REV. 623 (2015) [hereinafter Manhire, *There Is No Spoon*]; Luigi Mittone & Paolo Patelli, *Imitative Behaviour in Tax Evasion*, 14 ADVANCES IN COMPUTATIONAL ECON. 133 (2000); Georg Zaklan et al., *Analysing Tax Evasion Dynamics via the Ising Model*, 4 J. ECON. INT'L COORDINATION 1 (2009); Atilla Szabó et al., "TAXSIM Agent Based Tax Evasion Simulator," unpublished paper presented at the European Social Simulation Association Conference (ESSA) (2008).

This Article attempts to go further and explore the rudimentary—yet important—observation that in a self-report audit (SRA) system,⁵ tax compliance is at the same time a system of “complicatedness” and “complexity.” Noting a connection to what design theorists refer to as “wicked problems,” this Article follows the suggestion of researchers who refer to this combination as a “wicked system.”⁶ Taxpayers are neither merely the complicated constituents of a structurally complex system nor are they merely autonomous agents interacting with a host of other agents thereby participating in creating the emergent properties of a complex system. They are *both* constituents of a complicated structural system, and agents interacting with other agents in a complex dynamical system. These actors operate in a “wicked system” one that is inextricably both complicated and complex.⁷ This reality makes modeling such a system very difficult.⁸

The Article begins in Part II by introducing a distinction between “simplicity,” “complicatedness,” “complexity,” and “wickedness,” especially in relation to tax compliance. It then gives an overview in Part III of the

5. See Kotowski, *Audits as Signals*, *supra* note 2, at 179 (2014) (abbreviating a “self-report audit” system as “SRA”).

6. See Claes Andersson, Anton Törnberg & Petter Törnberg, *Societal Systems—Complex or Worse?*, 63 FUTURES: J. POL’Y, PLAN. & FUTURES STUD. 145, 149 (2014) [hereinafter Andersson, *Societal Systems*]; Horst W. J. Rittel first coined the term “wicked problem” in a 1967 seminar presentation on management. C. West Churchman, *Wicked Problems*, 14 MGMT. SCI. 141, 141 (1967) [hereinafter Churchman, *Wicked Problems*].

Professor Horst Rittel . . . suggested in a recent seminar that the term ‘wicked problem’ refer to that class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing. The adjective ‘wicked’ is supposed to describe the mischievous and even evil quality of these problems, where proposed ‘solutions’ often turn out to be worse than the symptoms.

Churchman, *Wicked Problems*, *supra*.

7. Essentially, tax compliance is a *game*, not a *decision*, contrary to what both neoclassical and behavioral economists might suggest. One of the first articles to recognize this potential by presenting a game theoretic model of tax compliance that internalizes enforcement in an iterative compliance-enforcement game was Michael J. Graetz, Jennifer F. Reinganum & Louis F. Wilde, *The Tax Compliance Game: Toward an Interactive Theory of Law Enforcement*, 2 J.L. ECON. & ORG. 1 (1986).

8. One is reminded of the famous line usually attributed to the Nobel laureate physicist Murray Gell-Mann: “Imagine how hard physics would be if electrons could think.” Scott E. Page, *Computational Models from A to Z*, 5 COMPLEXITY 35, 37 (1999) [hereinafter Page, *Computational Models*].

dominant theoretical literature in tax compliance—namely deterrence and behaviorist theories—and also reviews the primary claims of game theoretic approaches to tax compliance. Next, Part IV suggests a heuristic framework to characterize tax compliance as a “wicked system” so others may more easily chart the relations between problems, systems, and methods. Lastly, Part V examines some limitations of the methodological strategy of analyzing a system from the perspectives of “complicatedness” and “complexity,” both separately and in combination, and then offers some initial solutions and challenges for future work.

II. SIMPLICITY, COMPLICATEDNESS, COMPLEXITY & WICKEDNESS

At the highest level of abstraction, the difference between “simple,” “complicated,” and “complex” systems primarily deals with their philosophical foundations; particularly, *reductionism* and *holism*. Reductionism is the philosophical foundation of most simple and complicated systems. It views a system as “mechanized,” as a machine, and the best way to understand a mechanized system is to understand its component parts.⁹ If one understands all the parts, grasps reductionism, then one can understand the entire system.¹⁰ In contrast, holism is the philosophical foundation of complexity. While each of the component parts exists and acts according to the laws of physics, chemistry, biology, psychology, and sociology, the system as a whole cannot be determined or predicted even if one understands each of the individual components.¹¹ This is due in large part to a principle of complexity that holds a system’s organizational qualities *emerge* because of the constant interactions between the component parts. In short, the whole is more (even different) than the sum of its parts.¹²

9. See RICHARD DAWKINS, *THE BLIND WATCHMAKER: WHY THE EVIDENCE OF EVOLUTION REVEALS A UNIVERSE WITHOUT DESIGN* (1986); RICHARD H. JONES, *Clarification of Terminology*, in *REDUCTIONISM: ANALYSIS AND THE FULLNESS OF REALITY* 19 (2000); NANCEY MURPHY, *Reductionism and Emergence: A Critical Perspective*, in *HUMAN IDENTITY AT THE INTERSECTION OF SCIENCE, TECHNOLOGY AND RELIGION* 82 (Nancey Murphy & Christopher C. Knight eds., 2010).

10. This idea goes back to the time of Descartes, who believed all animals could be reductively explained. See RENÉ DESCARTES, *DE HOMINE* (1662).

11. See, e.g., SUNNY Y. AUYANG, *FOUNDATIONS OF COMPLEX-SYSTEM THEORIES: IN ECONOMICS, EVOLUTIONARY BIOLOGY, AND STATISTICAL PHYSICS* (1999); BARRY OSHRY, *SEEING SYSTEMS: UNLOCKING THE MYSTERIES OF ORGANIZATIONAL LIFE* (2008).

12. See JAN SMUTS, *HOLISM AND EVOLUTION* 88 (1926) (holism is the “tendency in nature to form wholes that are greater than the sum of the parts through creative evolution.”).

This Article presents a distinction between the terms “complexity”—usually associated with dynamical systems—and “complicatedness”—usually associated with structural systems.¹³ Although this Article argues that both qualities exist for tax compliance in an SRA system, it is instructive to initially regard the qualities as separate systems since contrasting the two might help explain each of them.

Complexity is typically associated with “bottom-up” self-organization, such as the non-directed, yet seemingly organized movements of a school of fish, a flock of starlings, or a crowd of people. From the interactions of the constituent parts, an organization emerges that is not directed by a single or even multiple planners; there emerges a whole that is different than the sum of its parts. However, complicatedness is typically associated with “top-down” organization, such as in architecture, clock making, or automobile manufacturing. Here, the assembly of parts, while extremely complicated, operates as designed by its planners, and the whole is the aggregate result of all its constituent parts.

Having defined these terms, the next logical inquiry is whether tax compliance in an SRA system is complicated or complex. Tax compliance is certainly complicated with its perplexing array of qualitatively different taxpaying individuals each with their own motivations related to tax compliance. It can be argued that much of its complicated structure arises from bottom-up rather than top-down processes. At the same time, much of the bottom-up structure is a direct reaction to the top-down parameters and constraints placed on the taxpayer population, such as tax laws, regulations, and administrative policies that have a great deal of complicatedness in their own right.¹⁴ One finds the taxpayer who faces the decision of whether to comply with the tax laws already existing in a context that is constrained, if not totally defined, by top-down parameters—whether they be audit and penalty rates or the multiple cultural, behavioral, and other noneconomic constraints related to compliance.

In this way, one can define the SRA system as a complicated structural system in which the taxpayer is constantly reacting to fixed, top-down constraints more than the taxpayer is generating bottom-up patterns of self-organizing emergence. Such a view constitutes a reductionist theory. If one

13. See *e.g.*, PÉTER ÉRDI, COMPLEXITY EXPLAINED 5–9 (2008).

14. See NAT’L TAXPAYER ADVOCATE 2014 ANN. REP. TO CONG. 102 (discussing how the IRS does not report on tax complexity as required by law); NAT’L TAXPAYER ADVOCATE 2012 ANN. REP. TO CONG. 3 (discussing the complexity of the Code); NAT’L TAXPAYER ADVOCATE 2010 ANN. REP. TO CONG. 3 (discussing the necessity for tax reform); NAT’L TAXPAYER ADVOCATE 2008 ANN. REP. TO CONG. 3 (discussing the complexity of the Code). Although the National Taxpayer Advocate uses the word “complexity” in her congressional reports, a contextual review suggests she means what this article calls structural complexity or “complicatedness.”

fully understands the component parts, one can fully understand the tax compliance system as a whole. The main difference between the existing mainstream tax compliance theories is that some view the component taxpayers as more complicated than others.

However, an SRA tax system is also properly regarded as complex in the bottom-up self-organization sense based on its numerous interactions, feedback loops, and undirected patterns that emerge from these constantly evolving interactions.¹⁵ Taxpayers, employers, and tax authorities act strategically in the context of other taxpayers, employers, and tax authorities. Other agents also interact in an SRA system such as tax preparers, advisors, and financial institutions. In many ways, an SRA tax system is a complex tax ecosystem, similar to the biological and societal systems typically associated with complexity science.

Which theory is correct? This Article postulates that there is no defensible reason why an SRA tax compliance system must be one or the other. Based on the system's top-down and bottom-up nature, tax compliance in an SRA system appears to be both "complicated" and "complex." Following the Swedish physical and social scientists Claes Andersson, Anton Törnberg, and Petter Törnberg, this Article suggests that a system exhibiting both "complicatedness" and "complexity" is properly designated as a "wicked system."¹⁶

Explained more thoroughly below, it is very easy to be confused by "wicked systems" when one is forced to choose between a "complicated" and "complex" label, and the respective model that accompanies each. For example, some tax compliance theories start with the individual, try to analyze what makes the individual taxpayer "tick," and then scale these motivations up to a macro model. This is a reductionist view since the micro is seen as existing prior to and, in effect, constituting the macro. If this is correct, then the individual taxpayer becomes the proper focus for investigation and explanation.

Complexity analysis provides great insights into systems that are properly considered complex, but not necessarily complicated. For instance, rule-based modeling assigns simple rules (sometimes even just one rule) to an "agent" in a computer model. Based on these simple rules and the interactions of the agents, the macro-level system displays emergent properties that can neither be explained nor predicted based solely on the underlying rules. Examples of such complex systems include earthquakes, flocking birds,

15. See, e.g., PHILIP BALL, WHY SOCIETY IS A COMPLEX MATTER: MEETING TWENTY-FIRST CENTURY CHALLENGES WITH A NEW KIND OF SCIENCE (2012); BRIAN CASTELLANI & FREDERIC W. HAFFERTY, SOCIOLOGY AND COMPLEXITY SCIENCE: A NEW FIELD OF INQUIRY (2009); R. KEITH SAWYER, SOCIAL EMERGENCE: SOCIETIES AS COMPLEX SYSTEMS (2005).

16. Andersson, *Societal Systems*, *supra* note 6, at 149.

schools of fish, and traffic patterns.¹⁷ However, when simple rule-based models are applied to wicked systems that display both complex and complicated qualities, they seem to give a compelling, yet incomplete explanation of the system and its dynamics.¹⁸

It is important to clarify that this Article does not propose that an SRA system is merely one type of complex system. Instead, it proposes that societal systems, such as an SRA system in the tax compliance context, are a completely different type. They are a type of system where complexity and complicatedness interact and yield a different and emergent quality. This new quality, called “wickedness,” does not lend itself well to traditional complexity science analysis, structural systems approaches, mathematical models, or any combination thereof. Wickedness is something more than complexity and complicatedness alone, and as Nobel laureate Philip Anderson famously put it, “more is different.”¹⁹

17. See, e.g., Ch. Becco et al., *Experimental Evidences of a Structural and Dynamical Transition in Fish Schools*, 367 *PHYSICA A* 487 (2006); Hanno Hildenbrandt et al., *Self-Organized Aerial Displays of Thousands of Starlings: A Model*, 21 *BEHAV. ECOLOGY* 1349 (2010); Boris S. Kerner, *Experimental Features of Self-Organization in Traffic Flow*, 81 *PHYSICAL REV. LETTERS* 379 (1998); Curtis T. McMullen, *Complex Earthquakes and Teichmüller Theory*, 11 *J. AM. MATH. SOC'Y*. 283 (1998).

18. See, e.g., John H. Miller & Scott E. Page, *The Standing Ovation Problem*, 9 *COMPLEXITY* 8 (2004) (modeling whether an audience keeps applauding based on an agent’s observation of others); Thomas C. Schelling, *Dynamic Models of Segregation*, 1 *J. MATH. SOC.* 143 (1971) [hereinafter Schelling, *Dynamic Models of Segregation*] (modeling segregation using an agent-based model where agents decide where to live based on the single rule of wanting to be similar in race to a neighbor). For agent-based models in general, see John Holland & John H. Miller, *Artificial Adaptive Agents in Economic Theory*, 81 *AM. ECON. REV.* 365 (1991); see also Randall Picker, *Simple Games in a Complex World*, 64 *U. CHI. L. REV.* 1225 (1997).

19. See Philip W. Anderson, *More Is Different: Broken Symmetry and the Nature of the Hierarchical Structure of Sciences*, 177 *SCI.* 393 (1972).

The ability to reduce everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe The [reductionist] hypothesis breaks down when confronted with the twin difficulties of scale and complexity. The behavior of large and complex aggregates of elementary particles, it turns out, is not to be understood in terms of a simple extrapolation of the properties of a few particles. Instead, at each level of complexity entirely new properties appear, and the understanding of the new behaviors requires research which I think is as fundamental in its nature as any other.

III. TRADITIONALLY-COMPETING THEORIES

Since 1972, there has been an extensive and varied assortment of attempts to explain the observed levels of tax compliance.²⁰ A shared assumption in the literature is the existence of an SRA tax system.²¹ This system is popular in many countries, including the United States. Simply put, an SRA system relies on individuals to assess the tax they owe by way of a recurring report to the tax authorities, and to timely pay the proper tax due. The tax authority regularly audits a very small sample of these reports and assesses additional penalties against taxpayers who underreport tax.²² Since revenues resulting from audits cost the tax authority money and revenues from voluntary compliance do not, governments have an interest in minimizing the former while maximizing the latter. An SRA system is usually more profitable than direct monitoring due to the enormous cost to the government of checking hundreds of millions of tax returns every year.²³

Id. at 393; *see also*, PHILIP W. ANDERSON, MORE AND DIFFERENT: NOTES FROM A THOUGHTFUL CURMUDGEON 135 (2011) (“The reductionist view starts from the top and searches for simpler and simpler first causes. What one sees from the opposite point of view is more and more complex consequences arising from simpler and simpler causes.”).

20. Although Allingham and Sandmo’s 1972 model is generally regarded as the first theoretical analysis of taxpayer behavior, the study of tax compliance began more than a decade earlier with the study of the rigidity of the German audit and penalty regime leading to increased tax noncompliance. Michael G. Allingham & Agnar Sandmo, *Income Tax Evasion: A Theoretical Analysis*, 1 J. PUB. ECON. 323 (1972) [hereinafter Allingham & Sandmo, *A Theoretical Analysis*]; Gustav Schmolders, *Fiscal Psychology: A New Branch of Public Finance*, 12 NAT’L TAX J. 340 (1959); *see also* Richard D. Schwartz & Sonya Orleans, *On Legal Sanctions*, 34 U. CHI. L. REV. 274 (1967).

21. *See* Kim C. Border & Joel Sobel, *Samurai Accountant: A Theory of Auditing and Plunder*, 54 REV. ECON. STUD. 525 (1987) (providing more detail on the SRA model in general); Jennifer F. Reinganum & Louis L. Wilde, *Income Tax Compliance in a Principal-Agent Framework*, 26 J. PUB. ECON. 1 (1985).

22. The average audit rate of individual income tax returns in the United States from taxable years 1996 through 2010 is less than one percent (approximately 0.0088 percent). I.R.S., *SOI Tax Stats - IRS Data Book*, <https://www.irs.gov/uac/SOI-Tax-Stats-IRS-Data-Book> (last updated Apr. 16, 2015) (providing links to each year’s Table 9a) [hereinafter I.R.S., *Data Book*]. Tax authorities often also assess penalties against taxpayers who do not timely pay the tax due in full; however, issues of underpayment are beyond the scope of this article. For these “additions to tax” for failure to timely file or pay, *see* I.R.C. § 6651(a).

23. *See, e.g.*, I.R.S., DATA BOOK 24–25 (2011), <https://www.irs.gov/pub/irs-soi/11databk.pdf> (reporting approximately 141 million individual income tax returns filed for taxable year 2010). Originally, the U.S. income tax laws required the federal tax authority to audit every single tax return. *See* Revenue Act of 1918, Pub.

A. Tax Compliance

Voluntary compliance is fundamental to a government with a self-reporting tax administration policy enforced by a relatively small number of audits.²⁴ For example, the United States government collects approximately ninety-seven percent of its tax revenues from taxpayers who voluntarily file their returns and timely pay the tax legally due.²⁵ The remaining 2.86 percent

L. No. 65-254, § 250(b), 40 Stat. 1057, 1083 (1919) (“As soon as practicable after the return is filed, the Commissioner shall [audit] it.”). The U.S. income tax laws were substantially re-written in 1954 and changed this requirement, thereby formally establishing an SRA system in which the probability of audit was less than certain; *see also* Internal Revenue Act of 1954, Pub. L. No. 83-591, 68 Stat. 730 (1954). By that time, the federal tax authority was receiving over 67.6 million tax returns each year and had the resources to audit only 2.4 percent. COMM’R OF INTERNAL REVENUE ANN. REP. TO CONG. 6, 12 (1954), <https://www.irs.gov/pub/irs-soi/53dbfullar.pdf>. Even before the ratification of the 16th Amendment to the United States Constitution, the United States tax system had elements of direct monitoring that survived until the 1954 Act. *See, e.g.*, Tariff Act of 1894, § 34, *reprinted in* 9 Q.J. ECON. 223, 232, § 3172 (1895) (“That every collector shall, from time to time, cause his deputies to proceed through every part of his district and inquire after and concerning all persons therein who are liable to pay any internal revenue tax”).

24. *See* I.R.C. §§ 6001 (flush language) (requiring taxpayers to make returns and to keep records adequate for the government to examine returns), 6201(a) (requiring the tax authority to make “inquiries, determinations, and assessments of all taxes”), 6202 (authorizing the tax authority to establish regulations governing proper modes of assessment); Reg. § 301.6201-1 (tax authority regulations establishing audits as a proper mode of assessment). Some prefer to refer to this dynamic as “quasi-voluntary” because of the threat of legal enforcement. *See, e.g.*, Itai Grinberg, *The Battle over Taxing Offshore Accounts*, 60 UCLA L. REV. 304, 355 (2012). As used in this article, “voluntary compliance” means the actions taxpayers take that they are required to take by law, but without direct compulsion from the tax authority.

25. The average voluntary compliance rate in the United States is approximately 83.4 percent, which means the average noncompliance rate is approximately 16.6 percent. *See, e.g.*, I.R.S., *Understanding the Tax Gap* (Mar. 2005), <http://www.irs.gov/uac/Understanding-the-Tax-Gap>. This measure is for *all* taxpayers (i.e., corporate income tax, individual income tax, excise tax, estate tax, etc.). For *individual* income tax underreporting, which is the subject taxpayer population for this Article, the voluntary compliance rate is approximately eighty-two percent and the underreporting rate is approximately eighteen percent. *See* I.R.S., INDIVIDUAL INCOME TAX UNDERREPORTING GAP ESTIMATES (Feb. 2007), http://www.irs.gov/pub/irs-utl/tax_gap_update_070212.pdf (estimating the taxable year 2001 Net Misreporting Percentage for the individual income tax underreporting gap at eighteen percent). Following the conventions used by almost all government reports examining IRS data, this Article assumes a two percent maximum margin of error and considers digits to be significant to three decimal places. *See* U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-09-555, REQUIRING INFORMATION REPORTING FOR CHARITABLE CASH

of collected tax revenues is a result of government audit enforcement.²⁶ By design, a self-reporting tax policy seeks to minimize audits and maximize taxpayer compliance; that is, the government seeks to spend the minimum amount necessary on audit enforcement and maximize the level of voluntary tax compliance.²⁷ Such a strategy gives the government the highest possible return on investment.²⁸ While there are direct costs of collecting the small percentage of the total revenue received through enforcement, the government obtains almost all of its tax revenues without paying any direct enforcement costs.

Tax noncompliance presents some significant fiscal and fundamental fairness problems for the government and its citizenry. First, noncompliance reduces the revenue necessary for the government to properly perform its function. Second, noncompliance creates a greater financial burden on those who voluntarily comply, since they must carry the load of those who do not comply. Therefore, a crucial policy inquiry is exactly what conditions promote voluntary tax compliance? A closely-related question is then what conditions *reduce* voluntary compliance?²⁹ If these questions can be addressed effectively, one stands a better chance of creating policies that maximize voluntary compliance while minimizing enforcement.³⁰

CONTRIBUTIONS MAY NOT BE AN EFFECTIVE WAY TO IMPROVE COMPLIANCE 2 (2009) (“We . . . reviewed data from IRS’s Statistics of Income (SOI) individual files Since the estimates we provide using these data sources are based on samples, they involve margins of error. Unless otherwise noted, all percentage estimates have margins of error of [two] percentage points or less”).

26. For 2006, the government collected \$2.21 trillion from voluntary compliance. It collected an additional \$65 billion from enforcement and late payments. As a result, the \$65 billion represents 2.86 percent of the total revenue collected from voluntary compliance, enforcement, and late payments, or $\$65B/(\$2,210B + \$65B)$. See IR-News Rel. 2012-4, 13 U.S. Tax Rep. (RIA) ¶ 61,084.

27. Kotowski, *Audits as Signals*, *supra* note 2, at 179 (“The apparent purpose of [an SRA strategy] is to reduce enforcement costs. If only a fraction of reports have to be audited, costs may be lower than the alternative of directly monitoring a population.”).

28. See J. T. Manhire, *What Does Voluntary Tax Compliance Mean?: A Government Perspective*, 164 U. PA. L. REV. ONLINE 11 (2015) [hereinafter Manhire, *Voluntary Tax Compliance*].

29. See Marjorie E. Kornhauser, *A Tax Morale Approach to Compliance: Recommendations for the IRS*, 8 FLA. TAX REV. 599 (2007) [hereinafter Kornhauser, *A Tax Morale Approach to Compliance*] (“[As] we observe tax administrators seeking to improve the efficiency of their revenue collections, there is growing recognition of the need to have a deeper understanding of why taxpayers do comply voluntarily.”).

30. This statement assumes that a certain level of noncompliance must be tolerated with an SRA tax policy. This Article does not seek to answer the normative question posed by theorists such as Joel Slemrod as to how much noncompliance should be tolerated. Joel Slemrod, *Cheating Ourselves: The Economics of Tax*

These questions have also plagued tax theorists for decades. Almost all of the literature seeks the answer by investigating the behavioral motivations of individual taxpayers faced with the decision under uncertainty whether to comply with tax laws. Such motivations include taxpayer rationality,³¹ nonrationality,³² morality,³³ social and cultural norms,³⁴ trust in

Evasion, 21 J. ECON. PERSP. 25, 44 (2007) [hereinafter Slemrod, *Cheating Ourselves*] (“In sum, no one has yet compellingly translated the theoretically correct characterization of optimal enforcement into a statement about how much evasion *should* be tolerated.”) (emphasis added).

31. See, e.g., Kurt J. Beron, Helen V. Tauchen & Ann Dryden Witte, *The Effect of Audits and Socioeconomic Variables on Compliance*, in WHY PEOPLE PAY TAXES: TAX COMPLIANCE AND ENFORCEMENT 67 (Joel Slemrod ed., 1992); Keith Crocker & Joel Slemrod, *Corporate Tax Evasion with Agency Costs*, 89 J. PUB. ECON. 1593 (2005); Steven Klepper & Daniel Nagin, *The Anatomy of Tax Evasion*, 5 J.L. ECON. & ORG. 1 (1989); Mitchell Polinsky & Steven Shavell, *The Optimal Tradeoff between the Probability and Magnitude of Fines*, 69 AM. ECON. REV. 880 (1979); Agnar Sandmo, *The Theory of Tax Evasion: A Retrospective View*, 58 NAT’L TAX J. 643 (2005).

32. See, e.g., BRUNO S. FREY, NOT JUST FOR THE MONEY: AN ECONOMIC THEORY OF PERSONAL MOTIVATION (1997); Sanjit Dhami & Ali al-Nowaihi, *Why Do People Pay Taxes? Prospect Theory Versus Expected Utility Theory*, 64 J. ECON. BEHAV. & ORG. 171 (2007); Lars P. Feld & Bruno S. Frey, *Trust Breeds Trust: How Taxpayers Are Treated*, 3 ECON. GOVERNANCE 87 (2002) [hereinafter Feld & Frey, *Trust Breeds Trust*]; John T. Scholz & Mark Lubell, *Cooperation, Reciprocity, and the Collective Action Heuristic*, 45 AM. J. POL. SCI. 160 (2001).

33. See, e.g., BENNO TORGLER, TAX COMPLIANCE AND TAX MORALE: A THEORETICAL AND EMPIRICAL ANALYSIS (2007); Massimo Bordignon, *A Fairness Approach to Income Tax Evasion*, 52 J. PUB. ECON. 345 (1993); Brian Erard & Jonathan S. Feinstein, *The Role of Moral Sentiments and Audit Perceptions in Tax Compliance*, 49 PUB. FIN. 70 (1994); James P. Gordon, *Individual Morality and Reputation Costs as Deterrents to Tax Evasion*, 33 EUR. ECON. REV. 797 (1989); Richard D. Schwartz & Sonya Orleans, *On Legal Sanctions*, 34 U. CHI. L. REV. 274, 291 (1966); Benno Torgler, *Moral Suasion: An Alternative Tax Policy Strategy? Evidence from a Controlled Field Experiment in Switzerland*, 5 ECON. GOVERNANCE 235 (2004); see also Allison Christians, *Avoidance, Evasion, and Taxpayer Morality*, 44 WASH. U. J.L. & POL’Y 39 (2014) (cautioning policymakers to distinguish between the moral discussion on tax noncompliance that constitutes illegal evasion and legally-compliant tax avoidance).

34. See, e.g., FRANK COWELL, CHEATING THE GOVERNMENT: THE ECONOMICS OF EVASION 219 (1990) (reporting a failure of experiments to link feelings on inequity and unfairness in the tax system to tax noncompliance); Marsha Blumenthal, Charles Christian & Joel Slemrod, *Do Normative Appeals Affect Tax Compliance? Evidence from a Controlled Experiment in Minnesota*, 54 NAT’L TAX J. 125 (2001); Josef Falkinger, *Tax Evasion, Consumption of Public Goods, and Fairness*, 16 J. ECON. PSYCHOL. 63 (1995); Christian Traxler, *Social Norms and Conditional Cooperative Taxpayers*, 26 EUR. J. POL. ECON. 89 (2010).

government,³⁵ and even the alignment of the government's policies with those of the citizenry.³⁶ Regrettably, these models have not been successful in producing results close enough to known macro-level enforcement and compliance data to be considered accurate. This Article takes the position that tax authorities and lawmakers stand a better chance of answering these tax compliance questions if they more thoroughly understand the type of system with which they are dealing.

B. Deterrence Theory

One of the first tax compliance theories was articulated by Michael Allingham and Agnar Sandmo in 1972, which focused on compliance as a byproduct of deterrence.³⁷ It was an application of Gary Becker's 1968 "economics-of-crime" model to the tax compliance discipline.³⁸ In this model, tax compliance is essentially a gamble.³⁹ Taxpayers are motivated by the

35. See, e.g., VALERIE BRAITHWAITE, *DEFIANCE IN TAXATION AND GOVERNANCE: RESISTING AND DISMISSING AUTHORITY IN A DEMOCRACY* (2009); Margaret Levi, *A State of Trust*, in *TRUST AND GOVERNANCE* 77, 91 (Valerie Braithwaite & Margaret Levi eds., 1998); Joel Slemrod, *Trust in Public Finance*, in *PUBLIC FINANCE AND PUBLIC POLICY IN THE NEW CENTURY* 49 (Sjibren Cnossen & Hans-Werner Sinn eds., 2003); Jan Hanousek & Filip Palda, *Quality of Government Services and the Civic Duty to Pay Taxes in the Czech and Slovak Republics, and other Transition Countries*, 57 *KYKLOS* 237 (2004); Benno Torgler, *Tax Morale, Rule-Governed Behaviour and Trust*, 14 *CONST. POL. ECON.* 119 (2003).

36. See, e.g., DAVID M. GROSS, *WE WON'T PAY!: A TAX RESISTANCE READER* (2008); Steven M. Sheffrin & Robert K. Triest, *Can Brute Deterrence Backfire? Perceptions and Attitudes in Taxpayer Compliance*, in *WHY PEOPLE PAY TAXES: TAX COMPLIANCE AND ENFORCEMENT* 193, 203 (Joel Slemrod ed., 1992); David Lazarus, *Not Paying Phone Tax Becomes War Protest*, *S.F. GATE.*, Dec. 4, 2005 ("Thousands of people are protesting the war in Iraq by refusing to pay federal phone taxes").

37. Allingham & Sandmo, *A Theoretical Analysis*, *supra* note 20, at 331–337. Although Allingham and Sandmo are traditionally cited as the first to apply a rational choice model to the issue of tax compliance, T. N. Srinivasan developed a similar model, presumably in parallel with and independently of Allingham and Sandmo. See T. N. Srinivasan, *Tax Evasion: A Model*, 2 *J. PUB. ECON.* 339 (1973).

38. Becker, *Crime and Punishment*, *supra* note 2.

39. The renowned polymath Daniel Bernoulli was one of the first theorists to formalize a sort of paleo-expected utility model for playing games of chance. See Daniel Bernoulli, *Exposition of a New Theory on the Measurement of Risk*, 22 *ECONOMETRICA* 23, 24 (1954) (providing a modern translation of his original paper that was published in 1738). The driving intuition behind the Allingham and Sandmo model is that tax evasion is akin to a game of chance. Bernasconi, *Tax Evasion*, *supra* note 1, at 123 ("Evading tax is like gambling. This was the central intuition of Allingham and Sandmo"). More generally, however, most of the literature attributes

desire to maximize their expected utility given the chance of getting caught not complying.⁴⁰

The extent of this motivation is the topic of significant theoretical disagreement.⁴¹ Without admitting that deterrence does not play a role in an individual's intention to comply, some skeptics minimize the degree to which tax compliance depends on enforcement.⁴² For example, James Alm indicated that the percent of individual income tax returns subject to a rigorous audit is relatively small in the United States, averaging about one percent of all individual returns filed.⁴³ Consequently, a purist deterrence analysis of an individual's compliance motivations should result in almost all returns containing underreported tax, which is inconsistent with observable compliance in the United States.⁴⁴ Although compliance rates are difficult to

expected utility theory to John von Neumann and Oskar Morgenstern, sometimes referred to as the Von Neumann-Morgenstern utility theorem. JOHN VON NEUMANN & OSKAR MORGENSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* (1953).

40. Two years after Allingham and Sandmo's publication, Shlomo Yitzhaki extended the model by showing that if the punishment for cheating is proportional to the underreported tax, not just the underreported income, then the tax rate becomes a trivial consideration. *See* Shlomo Yitzhaki, *Income Tax Evasion*, 2 J. PUB. ECON. 201 (1974).

41. *See, e.g.*, Michael Pickhardt & Aloys Prinz, *Behavioral Dynamics of Tax Evasion - A Survey*, 40 J. ECON. PSYCHOL. 1 (2014) (stating that the Allingham & Sandmo approach to tax evasion does not consider tax compliance interactions and dynamics).

42. *See, e.g.*, Feld & Frey, *Trust Breeds Trust*, *supra* note 32, at 90 (asserting that it is "more difficult to account for tax compliance in terms of expected punishment"); James Alm, Gary H. McClelland & William D. Schulze, *Why Do People Pay Taxes*, 48 J. PUB. ECON. 21, 21-22 (1992) [hereinafter Alm, *Why Do People Pay Taxes*] (concluding that enforcement does have a small and nonlinear impact on compliance, but any deterrent effect diminishes as the audit rate increases). *But see* Boris Maciejovsky, Herbert Schwarzenberger & Erich Kirchler, *Rationality Versus Emotions: The Case of Tax Ethics and Compliance*, 109 J. BUS. ETHICS 339 (2012) (finding that that audit probabilities and penalties can act as a deterrent to tax evasion, but the effectiveness of these deterrence elements is moderated by emotional affect).

43. James Alm & Michael McKee, *Audit Certainty, Audit Productivity, and Taxpayer Compliance*, 59 NAT'L TAX J. 801, 804 (2006) [hereinafter Alm & McKee, *Audit Certainty*] ("[A] standard result [of deterrence theory models] is that, given actual audit and fine rates, most people should rationally choose to cheat.").

44. *See* Mark D. Phillips, *Reconsidering the Deterrence Paradigm of Tax Compliance*, in I.R.S. PUB. 1500, *NEW PERSPECTIVES ON TAX ADMINISTRATION: AN IRS-TPC RESEARCH CONFERENCE 99* (2011) (citing Erich Kirchler et al., *Why Pay Taxes? A Review of Tax Compliance Decisions*, in *DEVELOPING ALTERNATIVE FRAMEWORKS FOR EXPLAINING TAX COMPLIANCE* (James Alm, Jorge Martinez-

estimate with precision, it is clear that not all individual taxpayers are cheating on their returns.⁴⁵ Even more suggestive is the fact that there was no statistically significant change in United States tax reporting and payment compliance for the past thirty years even though the individual income tax audit rate plummeted almost eighty percent between 1975 and 2000.⁴⁶

Additionally, critics of deterrence theory often cite survey and experimental results indicating that the impact of audit enforcement on compliance is indeterminate. First, it is unclear that audit rates have any direct effect on tax compliance.⁴⁷ Further, it is uncertain that taxpayers even know the actual audit rate.⁴⁸ Of those taxpayers who guess, the median estimate is roughly ten times that of the actual audit rate.⁴⁹ Second, it is unclear whether actual audits have a predictable effect on taxpayers' compliance after experiencing an audit. Some findings show taxpayers being more compliant after experiencing an audit.⁵⁰ Others show the exact opposite.⁵¹ Still others

Vazquez & Benno Torgler eds., 2010)) (“[T]hough the [deterrence theory] provides useful tools for tax policy . . . empirical evidence for its validity is rather weak.”).

45. See Bernasconi, *Tax Evasion*, *supra* note 1, at 128.

46. The individual income tax return audit rate was about 2.3 percent in 1975 and about 0.49 percent in 2000. U.S. Bureau of the Census, *Statistical Abstracts of the United States*; see also Kim Michael Bloomquist, Alan H. Plumley & Eric J. Toder, *Tax Noncompliance in the United States: Measurement and Recent Enforcement Initiatives*, in *SIZE, CAUSES AND CONSEQUENCES OF THE UNDERGROUND ECONOMY: AN INTERNATIONAL PERSPECTIVE* 214 (Chris Bajada & Friedrich Schneider eds., 2005).

47. Alm, *Why Do People Pay Taxes*, *supra* note 42.

48. See I.R.S., 1987 TAXPAYER OPINION SURVEY 38 (1988), <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/8927> (follow “Codebook.pdf”) (forty percent of respondents answered “Don’t Know” to the following question: “[O]ut of every 100 taxpayers at your income level, how many or what percent do you think were audited last year?”).

49. Of those who responded that they knew the audit rate, the mean estimated audit probability was about nine percent. *Id.* The average individual income tax audit rate for taxable years 1996 through 2010 was about 0.9 percent. I.R.S., *Data Book*, *supra* note 22 (providing links to each year’s Table 9a).

50. See, e.g., PAUL WEBLEY ET AL., *TAX EVASION: AN EXPERIMENTAL APPROACH* 90–101 (1991); Michael W. Spicer & Rodney E. Hero, *Tax Evasion and Heuristics*, 26 *J. PUB. ECON.* 263 (1985).

51. See, e.g., Nicolás Garrido & Luigi Mittone, *An Agent Based Model for Studying Optimal Tax Collection Policy Using Experimental Data: The Cases of Chile and Italy*, 42 *J. SOCIO-ECON.* 24 (2013); Francesco Guala & Luigi Mittone, *How History and Convention Create Norms: An Experimental Study*, 31 *J. ECON. PSYCHOL.* 749 (2010); Barbara Kastlunger et al., *Sequences of Audits, Tax Compliance, and Taxpaying Strategies*, 30 *J. ECON. PSYCHOL.* 405 (2009). This is sometimes called the “bomb crater effect.” See Emily Ann Satterthwaite, *Dynamic Deterrence* 9 (July 1, 2015) (unpublished manuscript) (on file with author) (quoting Luigi Mittone, *Dynamic*

show a mix of both.⁵² Third, it is equally unclear if audits (rates or the audit itself) have any predictable indirect effects on voluntary compliance.⁵³

C. Behaviorist Theory

The catalyst for most behavioral models has been the general frustration of theorists with the deterrence theory approach to explaining the intentional actions of individuals.⁵⁴ Psychological and neurological evidence strongly suggest that people often misperceive rationally objective measures when faced with decisions.⁵⁵

Behaviour in Tax Evasion: An Experimental Approach, 35 J. SOCIO-ECON. 813, 824 n.9 (2006)).

52. See, e.g., James Alm, *Tax Compliance and Administration*, 72 PUB. ADMIN. PUB. POL'Y 741 (1999); Norman Gemmill & Marisa Ratto, *Behavioral Responses to Taxpayer Audits: Evidence from Random Taxpayer Inquiries*, 65 NAT'L TAX J. 33 (2012) (finding taxpayers who experienced an audit and were found compliant were less likely to be compliant going forward, and taxpayers who were found not compliant were more likely to be compliant in the future).

53. See, e.g., Jeffrey A. Dubin, Michael J. Graetz & Louis L. Wilde, *The Effect of Audit Rates on Federal Individual Income Tax, 1977-1986*, 43 NAT'L TAX J. 395 (1990) (finding that for every dollar of revenue produced through audit enforcement, an additional six dollars of revenue was generated from the "ripple effects" of audits in general); Alan H. Plumley, *The Determinants of Individual Income Tax Compliance: Estimating The Impacts of Tax Policy, Enforcement, and IRS Responsiveness*, I.R.S. PUB. 1916 (Rev. 11-96) (1996) (finding that for every one dollar in audit tax adjustments, indirect effects produced almost an additional twelve dollars in voluntarily compliance from 1982 through 1991). Yet, a potential weakness of these studies is their reliance on *aggregated* data to put forward a model of *individual* behavior. See Kim Michael Bloomquist, *Agent-Based Simulation of Tax Reporting Compliance* 21 (July 20, 2012) [hereinafter Bloomquist, *Agent-Based Simulation*] (unpublished Ph.D. dissertation, George Mason University), http://digilib.gmu.edu/dspace/bitstream/handle/1920/7927/Bloomquist_dissertation_2012.pdf?sequence=1 ("To the extent such studies find a statistically significant relationship between audit probability and tax compliance, how can we be sure this relationship is not result of limitations imposed by the data?").

54. See, e.g., Bernasconi, *Tax Evasion*, *supra* note 1, at 133 (noting the wide variance in deterrence models leaves one wondering if expected utility models are of any value at all); John D. Hey & C. Orme, *Investigating Generalizations of Expected Utility Theory Using Experimental Data*, 62 ECONOMETRICA 1291 (1994); Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision under Risk*, 47 ECONOMETRICA 263 (1979) (spending almost half of the paper criticizing expected utility theory before presenting their alternative theory).

55. Behavioral economics in general attempts to integrate psychology and economics to show that individual behavior often deviates from what is predicted by neo-classical economic models. See COLIN F. CAMERER & GEORGE LOEWENSTEIN, *Behavioral Economics: Past, Present, Future*, in *ADVANCES IN BEHAVIORAL*

Certainly, the rational actor so common to deterrence theory models is an ideal type. This ideal type has certain pedagogical benefits, such as a fundamental understanding of strategic behavior, incentives, and expectations, but reality is rarely ideal. For example, gases in reality rarely obey the ideal gas law⁵⁶ and observable fluids rarely act as perfect fluids.⁵⁷ Likewise, taxpayers in reality rarely act as rational actors. Nevertheless, behaviorist theory goes farther. It is not simply the case that taxpayers do not always make completely rational choice about tax compliance.⁵⁸ It appears there are certain psychological and neurological limitations that make it so taxpayers sometimes *cannot* choose that which objectively maximizes their utility.⁵⁹

ECONOMICS 3 (Colin F. Camerer et al. eds., 2004) (providing an overview of behavioral economics as a movement and a study). In reviewing the literature, James Alm notes that behavioral models recognize that self-interest is clearly not the sole motivator of intentional action. Instead, decisions are also influenced by collective notions such as “social norms, social customs, fairness, trust, reciprocity, tax morale, and even patriotism, as well as by individual notions of guilt, shame, morality, altruism, or alienation.” James Alm, *Measuring, Explaining, and Controlling Tax Evasion: Lessons from Theory, Experiments, and Field Studies*, 19 INT’L TAX PUB. FIN. 54, 63 (2012); *see also*, Nigar Hashimzade, Gareth D. Myles & Binh Tran-Nam, *Applications of Behavioural Economics to Tax Evasion*, 27 J. ECON. SURV. 941 (2013) (reviewing recent models that apply behavioral economics to the individual taxpayer’s compliance choice); Michael Wenzel, *Motivation or Rationalisation? Causal Relations between Ethics, Norms and Tax Compliance*, 26 J. ECON. PSYCHOL. 491 (2005).

56. The ideal gas law is an equation first derived by Émile Clapeyron in 1834, which represented the state of an ideal (hypothetical) gas. It closely approximates the behavior of many gases, although it has several limitations. *See* Émile Clapeyron, *Mémoire sur la Puissance Motrice de la Chaleur*, 14 J. L’ÉCOLE POLYTECHNIQUE 153 (1834).

57. Perfect fluids are idealized forms that have no shear stresses, viscosity, or heat conduction, even though these three characteristics are found in most real (observable) fluids. *See, e.g.*, Marcelo M. Disconzi et al., *New Approach to Cosmological Bulk Viscosity*, 91 PHYSICAL REV. D, 043532 (2015) (discovering a new mathematical formulation for the viscosity of the universe using non-perfect fluid models); Abraham H. Taub, *General Relativistic Variational Principle for Perfect Fluids*, 94 PHYSICAL REV. 1468 (1954).

58. *See, e.g.*, Andrew T. Hayashi, *The Legal Salience of Taxation*, 81 U. CHI. L. REV. 1443, 1464–84 (2014) (arguing that the psychological prominence of a specific tax provision informs taxpayer action regarding that provision).

59. As an example, there is evidence of a conflict between the intrinsic and extrinsic motivations of an individual. Under intrinsic motivations, a taxpayer might voluntarily comply with tax obligations because of a motivator such as civic virtue, duty, or patriotism. However, extrinsic motivation could cause the taxpayer to comply because of threat of punishment. Bruno Frey suggests that increasing extrinsic motivation with policies, such as increased penalties, might “crowd out” intrinsic motivation by making people feel that they voluntarily comply with tax laws because

While many theorists embrace the notion of “positive peer pressure” that comes from social norms leading to compliance,⁶⁰ Eric Posner concludes that signaling, not norms, drives individual tax compliance behavior.⁶¹ Although the impetus for his theory is to explain social norms as they relate to tax compliance, Posner determined that a taxpayer’s decision to comply is based on how the taxpayer believes others will perceive and judge such actions (the “signals”), instead of norms of the group being internalized to cause feelings of guilt or remorse as a consequence of a decision not to comply.⁶²

D. Signaling Theory

Whereas Posner argues that taxpayers voluntarily comply to signal socially-acceptable behavior in a community, a certain game theoretic approach argues that the tax authority is also concerned with signaling as a means of motivating voluntary compliance. This third theory views the taxpayers’ perception of the tax authority’s auditing function strength as yet another compliance incentive. Signaling theory differs from traditional deterrence theory in that it does not depend on the calculated probability of a noncompliant taxpayer experiencing an audit. Rather, it focuses on the taxpayers’ perception of the government as a “strong” auditor; the tax authority has a reputation both for accurately selecting tax returns for audit that contain noncompliance, and the audits themselves are very effective at discovering noncompliance on an audited tax return.⁶³ In other words,

they have to, instead of wanting to comply. See Bruno S. Frey, *A Constitution for Knaves Crowds Out Civic Virtues*, 107 ECON. J. 1043 (1997). See generally Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCI. 1124 (1974).

60. Examples of social interactions theory as applied to tax evasion can be found in a variety of authorities. See Frank A. Cowell & James P.F. Gordon, *Unwillingness to Pay: Tax Evasion and Public Good Provision*, 36 J. PUB. ECON. 305 (1988) (fairness); Bernard Fortin, Guy Lacroix & Marie-Claire Villeval, *Tax Evasion and Social Interactions*, 91 J. PUB. ECON. 2089 (2007) (tax morale); James P. F. Gordon, *Individual Morality and Reputation Costs as Deterrents to Tax Evasion*, 33 EUROPEAN ECON. REV. 797 (1989) (trust); Youngse Kim, *Income Distribution and Equilibrium Multiplicity in a Stigma-Based Model of Tax Evasion*, 87 J. PUB. ECON. 1591 (2003) (social customs); Gareth D. Myles & Robin A. Naylor, *A Model of Tax Evasion with Group Conformity and Social Customs*, 12 EUROPEAN J. POL. ECON. 49 (1996) (reciprocity); Christian Traxler, *Social Norms and Conditional Cooperative Taxpayers*, 26 EUR. J. POL. ECON. 89 (2010) (patriotism).

61. ERIC A. POSNER, *LAW AND SOCIAL NORMS* (2000); Eric A. Posner, *Law and Social Norms: The Case of Tax Compliance*, 86 VA. L. REV. 1781 (2000) [hereinafter Posner, *The Case of Tax Compliance*].

62. Posner, *The Case of Tax Compliance*, *supra* note 61, at 1818–19.

63. Kotowski, *Audits as Signals*, *supra* note 2, at 181. The IRS appears to meet these criteria—strong audit selection and strong detection of underreporting—

taxpayers perceive that the tax authority's audit strength makes it very difficult to get away with underreporting tax.⁶⁴

Maciej Kotowski, David Weisbach, and Richard Zeckhauser argue that such a reputation-based compliance incentive is critical to a tax system based on an SRA strategy.⁶⁵ A strong tax authority need not have the most auditors, just the best—or at least they must be *perceived* as the best by the taxpayer population. Consequently, a tax authority perceived as strong might actually have a lower audit rate than a tax authority perceived as weak since the strong authority need not employ as many auditors. In fact, a high audit rate might actually be an attempt by a weak authority to appear strong by employing more auditors.⁶⁶

The crux of signaling theory is that there exists a two-way information asymmetry.⁶⁷ Taxpayers know their true tax liability, the tax authority does not.⁶⁸ There is also a reciprocal epistemological problem. Tax authorities know their true auditing strength, taxpayers do not. When making compliance decisions, taxpayers must rely on heuristics—or mental shortcuts—as to the strength of the tax authority and, therefore, their estimated probability of being audited if they underreport tax.⁶⁹ Taxpayers can only estimate what the tax authority actually knows.

Kotowski, Weisbach, and Zeckhauser argue that it is this signaling, including the taxpayer's interpretation of the authority's signal, that drives an individual taxpayer's choice to voluntarily comply with the tax laws in an SRA system.⁷⁰ The tax authority's overall reputation for audit strength is ultimately more critical than the number of audits the authority performs. According to the theory, the tax authority's perceived strength, and not the probability of detection based on the audit rate, should be the paramount focus of any government seeking to maximize voluntary compliance and minimize audit costs.

based on the published enforcement data of the IRS Statistics of Income division. See Manhire, *Perspective-Dependent Theory*, *supra* note 1, at 63,637 (discussing the methodology for calculating the probability of the IRS detecting underreported tax if it selects a return for audit).

64. Kotowski, *Audits as Signals*, *supra* note 2, at 181–82.

65. *Id.* at 183; see also A. MITCHELL POLINSKY & STEVEN SHAVELL, *The Theory of Public Enforcement of Law*, in 1 HANDBOOK OF LAW AND ECONOMICS 403, 405–54 (2007).

66. Kotowski, *Audits as Signals*, *supra* note 2, at 194–95.

67. *Id.* at 180–81; see also Mark B. Cronshaw & James Alm, *Tax Compliance with Two-Sided Uncertainty*, 23 PUB. FIN. Q. 139, 161–63 (1995); Inés Macho-Stadler & J. David Pérez-Castrillo, *Auditing with Signals*, 69 ECONOMICA 1, 10–12 (2002).

68. Kotowski, *Audits as Signals*, *supra* note 2, at 180–81.

69. *Cf.* Manhire, *Perspective-Dependent Theory*, *supra* note 1, at 643–45.

70. See Kotowski, *Audits as Signals*, *supra* note 2.

There is supporting evidence for Kotowski, Weisbach, and Zeckhauser's view of the tax compliance system as one with dynamic—not just structural—features. Both deterrence and behaviorist theories assume taxpayers independently react to motivations, whether those motivations are internal or external, objective or subjective. However, experience shows that most taxpayers rely heavily on the advice and opinions of others when making compliance decisions. Some of these interactions might be informal, such as advice from a spouse, friend, or family member, but many are more formal. In the United States, almost two-thirds of all individual income tax return filers seek advice and assistance from commercial tax preparers.⁷¹ Research findings indicate that the choice of preparer influences the level of tax compliance.⁷² Tax compliance decisions also rest on information taxpayers receive from banks, employers, and financial institutions, usually from information returns, such as Forms W-2 or 1099 series.

Such interactions are only those on the taxpayers' "side." As Kotowski, Weisbach, and Zeckhauser point out, interactions between the tax authority and taxpayers, taxpayers and other taxpayers, and even tax authorities and other tax authorities can lead to strategic behaviors.⁷³ These strategic behaviors become iterative and feed back into each other. For example, a tax authority's signaling through its audits partially informs taxpayers' decisions on compliance. The same signaling also informs other tax authorities on their signaling through audits. Taxpayer compliance decisions feed back into the decisions of tax authorities regarding how to signal with audits. These new signals then feed back into future taxpayer compliance decisions. The constant iterative nature of these and other interactions suggest that tax compliance as a system is not just structural as suggested by behaviorist and deterrence theories, but it is also dynamical.

E. *Conclusions from the Literature*

The United States has chosen a tax administration policy of voluntary compliance and assessment reinforced by occasional auditing. An extreme alternative to this policy would be for the tax authority to individually monitor and assess the tax liability of every individual subject to its jurisdiction. Even if one assumes that such an extreme alternative would eliminate tax

71. Kim Michael Bloomquist, *Who Does Your Taxes? Social Learning and the Decision to Use a Tax Preparer*, 101 NAT'L TAX ASSOC. PROC. 130 (2008).

72. Brian Erard, *The Influence of Tax Audits on Reporting Behavior*, in WHY PEOPLE PAY TAXES: TAX COMPLIANCE AND ENFORCEMENT 95 (Joel Slemrod ed., 1992); Kim Michael Bloomquist, Michael F. Albert & Ronald L. Edgerton, *Evaluating Preparation Accuracy of Tax Practitioners: A Bootstrap Approach*, IRS RES. BULL. 77 (I.R.S. PUB. 1500, 2007).

73. Kotowski, *Audits as Signals*, *supra* note 2, at 181.

noncompliance—which it might not—the direct and indirect administrative costs associated with carrying out that policy would be crippling. It certainly would not be ideal, no matter how the term is defined.⁷⁴ Therefore, tax noncompliance is a reality inherent to an SRA system.⁷⁵ Since tax noncompliance will always exist to some degree, policies should be concerned with maximizing voluntary compliance, minimizing audit costs, or both to the extent possible.

An intuitive solution to noncompliance is to increase the audit rate since—as the IRS itself suggests—enforcement presence could be directly associated with compliance levels.⁷⁶ However, such a conclusion remains instinctual conjecture without a better understanding of the dynamics governing the overall SRA strategy.⁷⁷ An improved understanding can assist tax policymakers in their goal of maximizing voluntary compliance and minimizing audit costs since it is possible that the effects of enforcement on compliance are not as direct as deterrence theory suggests.

One can conclude from the deterrence and behaviorist literature that although theorists disagree as to the degree of influence enforcement has on compliance, all agree that deterrence in one form or another remains a key motivation when it comes to *individual* compliance decisions. This appears to be the case whether the theory is rational or behavioral. Even empirical evidence by those who support a behaviorist theory suggests that individual taxpayers comply more often when immediately faced with a higher

74. See Jonathan Baldry, *Income Tax Evasion and the Tax Schedule: Some Experimental Results*, 42 PUB. FIN. 357 (1987).

75. Cf. Manhire, *Voluntary Tax Compliance*, *supra* note 28.

76. See, e.g., NAT'L TAXPAYER ADVOCATE 2014 ANN. REP. TO CONG. 31 (discussing how the lack of a cross-functional geographic footprint impedes the IRS's ability to improve voluntary compliance and effectively address noncompliance); NAT'L TAXPAYER ADVOCATE 2009 ANN. REP. TO CONG 185 (discussing how the IRS does not have a significant audit program focused on detecting the omission of gross receipts); NAT'L TAXPAYER ADVOCATE 2009 ANN. REP. TO CONG 168 (discussing how the IRS exam function is missing opportunities to maximize voluntary compliance at the local level); NAT'L TAXPAYER ADVOCATE 2004 ANN. REP. TO CONG 220 (examining the IRS examination strategy).

77. Theorists such as Yitzhaki and Slemrod argue that this intuition is incorrect. See Joel Slemrod & Shlomo Yitzhaki, *The Optimal Size of a Tax Collection Agency*, 89 SCANDINAVIAN J. ECON. 183 (1987). They claim the additional investment in audit enforcement should be equal to the increased marginal social benefit of reduced tax noncompliance. Slemrod, *Cheating Ourselves*, *supra* note 30, at 43. Not surprisingly, it is extremely difficult to measure social benefit well enough to determine an increase or decrease, thereby making the task of correlating an increase in social benefit to an increase in audit enforcement all the more difficult. Slemrod readily admits this difficulty. *Id.* For this reason, Yitzhaki and Slemrod's recommendation seems relegated to the realm of philosophy until such time as social benefit can be adequately measured.

probability of audit.⁷⁸ This sensitivity to increased audit probability can be due to a rational calculation of costs and benefits based on specific audit probability, the aversion to do something seen as “wrong” in the eyes of others, or the fear that the overall (but not specific) probability of “getting caught” is greater with a strong tax authority. All three act as possible deterrents against tax noncompliance; stated differently, all three are possible motivations for voluntary compliance.

Yet, Kotowski, Weisbach, and Zeckhauser imply that tax compliance is potentially something more (or even different) than the collection of individual motivations.⁷⁹ They acknowledge a structural system whereby tax compliance is an aggregation of these individual motivations to comply. This structural system with its many possible motivations that explain tax compliance is indeed complicated.⁸⁰ Moreover, the authors’ observations unearth something other than a structural system. They suggest a dynamical system made up of multiple interactions and feedback loops that are the hallmark of complexity.⁸¹

In summary, both deterrence theory and behaviorist theory see tax compliance as a mechanism that can be reduced to its component parts—individual taxpayers. In other words, both deterrence and behaviorist theories share a similar view of tax compliance. Both theories view the system as having linear cause and effect, and both believe that tax compliance is predictable if an analyst can just gather enough data on each individual. They only disagree on the *degree* of complicatedness in the system. Deterrence theory sees the system as relatively simple (low complicatedness). The only meaningful variable is the probability of a taxpayer experiencing an audit. Behaviorist theory sees the system as perhaps very complicated (high complicatedness); each person having a host of differing motivations for voluntarily complying.

The signaling theory of Kotowski, Weisbach, and Zeckhauser sees the relationship between tax authorities, taxpayers, and each other as an iterative system where cause and effect are less clear because each decision feeds back to another decision maker. Signaling theory sees tax compliance as a nonlinear complex system instead of a complicated mechanism, yet signaling theory’s

78. Alm & McKee, *Audit Certainty*, *supra* note 43, at 811 (finding that greater certainty of audit reduces noncompliance); Slemrod, *Cheating Ourselves*, *supra* note 30, at 38 (“[T]here has been no compelling empirical evidence addressing how noncompliance is affected by the *penalty* for detected evasion, as distinct from the *probability* that a given act of noncompliance will be subject to punishment.”) (emphasis added).

79. See Kotowski, *Audits as Signals*, *supra* note 2.

80. See *supra* Part II for discussion on complicatedness.

81. See Kotowski, *Audits as Signals*, *supra* note 2, at 200–02.

model is fairly uncomplicated since it still relies on a simple mathematical model (high complexity; low complicatedness).⁸²

So which tax compliance theory is correct? The reader almost invariably recognizes truth in all three of these theories. Then perhaps all three are correct and they only appear at odds with each other based on a certain perspective. As with previous work, this Article examines this notion.⁸³ Whereas before the author attempted to do so with a simple agent-based computational model, this Article presents a heuristic framework to help think about tax compliance as a system that exhibits signs of both a complicated structure and a complex dynamic (high complicatedness; high complexity). The remainder of this Article explores this synthesis of complexity and complicatedness in an effort to better understand SRA as a “wicked” system.

IV. A PROPOSED FRAMEWORK

The term “wicked system” recognizes a potentially deep connection (whose exact nature remains to be worked out) between this type of system and what many now call “wicked problems.” The design theorist Horst Rittel first coined the term “wicked problem,” which is a problem that is difficult to solve because of changing requirements that are almost impossible to recognize.⁸⁴ Due to complex interdependencies, an attempt to solve one particular aspect of a wicked problem could create (or reveal) more problems. They are termed “wicked” because the proposed solutions often turn out to be worse than the initial problem.⁸⁵

Just about any large-scale societal problem can be confidently put into the category of a wicked problem: starvation, climate change, geopolitical conflicts, social disenfranchisement, and so on. All of these are problems that escape definition. There is a constant feeling that the efficacy of proposed solutions is called into question not only with regard to feasibility and adequacy, but also with regard to the risk of creating cascades of other problems. These problems are impossible to foresee and may be even worse

82. See *id.* at 185 (“Our formal model, like most, simplifies for clarity and tractability.”).

83. See Manhire, *There Is No Spoon*, *supra* note 4, at 32–45.

84. See Churchman, *Wicked Problems*, *supra* note 6, at 141.

85. *Id.*; see also JEFF CONKLIN, *DIALOGUE MAPPING: BUILDING SHARED UNDERSTANDING OF WICKED PROBLEMS* 7 (2006) (“Solutions to wicked problems are not right or wrong. They are simply ‘better,’ ‘worse,’ ‘good enough,’ or ‘not good enough.’ With wicked problems, the determination of solution quality is not objective and cannot be derived from following a formula.”).

than the initial problem.⁸⁶ The domain of wicked problems in social systems is vast—it includes just about any problem short of trivialities.⁸⁷ One can either “tame” wicked problems by creating “an aura of good feeling and consensus” or by “carving off” a piece of the problem and finding a rational and feasible solution to this piece.”⁸⁸ This Article suggests the same holds true for a “wicked system,” such as tax compliance in an SRA system.

As a way of simplifying this typology, this Article proposes a heuristic framework to help better understand relations between simple (deterrence theory), complicated (behaviorist theory), complex (signaling theory), and wicked systems. Figure 1 shows system types and theoretical approaches based on the system qualities of complexity and complicatedness.

Figure 1. A Proposed Framework (four-field graph version)

High Complexity	<i>Signaling Theory</i> (Complex System)	<i>Reality</i> (Wicked System)
Low Complexity	<i>Deterrence Theory</i> (Simple System)	<i>Behaviorist Theory</i> (Complicated System)
	Low Complicatedness	High Complicatedness

This framework provides four ideal system types: Simple systems are neither complex nor complicated (bottom-left corner). Complex systems are complex, but not very complicated (upper-left corner). Complicated systems are complicated, but not very complex (bottom-right corner). Wicked systems are both complicated and complex (upper-right corner). This framework is presented as a four-field graph, yet it can also be thought of as a graph with continuous axes. The first is useful for thinking of complexity and complicatedness primarily as binary qualities. The second is useful for thinking of complexity and complicatedness primarily as graded quantities.

Figure 1 maps deterrence theory, behaviorist theory, and signaling theory into a complexity-complicatedness matrix. Deterrence theory is a

86. The “unintended consequence” argument is not new. *See, e.g.*, Andrew P. Morriss, *Seeing Like a Taxman*, 135 GLOBAL TAX WKLY., June 11, 2015, https://williambyrnes.files.wordpress.com/2015/06/global-tax-weekly_seeing_like_a_taxman.pdf. What is new here is the proposition that tax policy can have unintended consequences on the compliance system (macro), particularly if the intended effects are focused only on individual (micro) models of taxpayer compliance.

87. Horst W. J. Rittel & Melvin M. Webber, *Dilemmas in a General Theory of Planning*, 4 POL’Y SCI. 155, 160 (1973)

88. Churchman, *Wicked Problems*, *supra* note 6, at 141.

simple model due to its closed-form equations and strong assumptions about agent rationality and equilibrium that serve to make models mathematically tractable.⁸⁹ Behaviorist theory is a complicated model.⁹⁰ It expands the simplicity of deterrence theory by holding that tax compliance in an SRA system is dependent on the seemingly infinite permutations of individual motivations to voluntarily comply. It is still a mechanistic theory, but the components of the mechanism are so complicated that, as a practical matter, one cannot discuss tax compliance as a large-scale structure even though the structure could be determined if one were able to know all of the motivations of the taxpayers composing the system. In theory, this would expand the reach of formal methods from the simple (low complicatedness; low complexity) corner towards the complicated (high complicatedness; low complexity) corner. Signaling theory is a complex model: it shares the low complicatedness of deterrence theory by reducing the interactions to a simple, tractable model, but adds a strong attention to nonlinear feedback processes that make cause and effect difficult to determine.⁹¹

This Article posits that, in reality, tax compliance in an SRA system is a mix of both high complicatedness and complexity. It is a wicked system that combines a primarily structural quality found in complicated systems with a primarily dynamic quality found in complex systems. Certainly, complex models like signaling theory and complicated models like behaviorist theory are each challenging in their own right—combining them makes them even more so.

To understand this intermix, one must abandon the assumption that the combination is in anyway linear; that is, one must not assume that high complexity “plus” high complicatedness somehow “equals” a wicked system. Indeed, the framework described here may make it seem that simple, but it most assuredly is not. If high complexity plus high complicatedness equaled a wicked system (much like $1 + 1 = 2$), then a wicked system would be no more than another complicated (structural) system. With wicked systems, it is possible that $1 + 1 = 2$, but sometimes it equals 1, yet other times it equals both 2 and 1.⁹² The reason for this is that elements of complicated and complex systems fuse together to form something different than the isolated qualities of each element.⁹³

89. See *supra* Part III.B.

90. See *supra* Part III.C.

91. See *supra* Part III.D.

92. The following is an overly-basic example, but it is instructive to understand how $1 + 1$ could equal 2 or 1, depending on the perspective: Take a United States \$2 note (the one with Thomas Jefferson on the front). Certainly, the sum of two \$1 notes (with George Washington on the front) is equal to the monetary unit of \$2, but the two \$1 notes together are also equivalent to the single \$2 note.

93. See Andersson, *Societal Systems*, *supra* note 6, at 150.

In wicked systems, complexity and complicatedness become mutually reinforcing. The self-organization dynamic of complexity (bottom-up quality) generates and maintains a macro-level structure of complicatedness. That macro-level structure then creates micro-level opportunities (top-down quality) for self-organization. The elements of wicked systems constantly form new arrangements and dissolve old patterns, which is mostly in response to extremely local events. This “dance” produces a state of constant renegotiation between complicated structures and complex dynamics.⁹⁴

A wicked system, such as tax compliance in an SRA system, is more closely compared to an “arena of interaction” than to a structure *per se*. Taxpayers react to local perceptions of risk and cultural, social, and individual norms in response to signals produced by tax authorities and others operating in the system. Tax authorities in turn make decisions on tax policy and administration based on taxpayer actions (or at least how the authorities perceive taxpayer actions) that in turn signal parameters in which new taxpayer patterns of behavior emerge, and the dance continues.

This is potentially why sometimes one sees significantly different patterns of taxpayer compliance at disaggregate levels of classification, although aggregate tax compliance has remained statistically unchanged since the 1960s.⁹⁵ For example, the overall voluntary compliance rate was 83.1 percent for 2006 and 83.7 percent for 2001 with a 2 percent margin of error, thereby making the compliance measures statistically identical.⁹⁶ The aggregate gross tax gap for all returns was about \$450 billion for 2006 and about \$345 billion for 2001; an increase of 30 percent. Yet, in the same period, the gross tax gap for corporate income tax increased by 123 percent. Disaggregated further, the gross tax gap for small corporations (< \$10 million) increased 280 percent, whereas the gross tax gap for large corporations (\geq \$10 million) increased 92 percent.

Even though there is a constant undulation of pattern renegotiation beneath the surface of the system, the macro-level tax compliance measures show no change. Clearly, the tax compliance system remains robust and persistent in spite of the constant micro-level upheaval.⁹⁷ This persistence implies that tax compliance in an SRA system might remain essentially the

94. *Id.* at 150–51.

95. See Manhire, *There Is No Spoon*, *supra* note 4, at 40 n.123 (discussing the history and data associated with compliance rates in more detail).

96. See I.R.S., TAX GAP FOR TAX YEAR 2006: OVERVIEW, tbl. 1 (Jan. 6, 2012), http://www.irs.gov/pub/newsroom/overview_tax_gap_2006.pdf. (“The gross tax gap is defined as the amount of true tax liability faced by taxpayers that is not paid on time.”).

97. Cf. Gerhard Schlosser, *Self-Re-Production and Functionality: A Systems-Theoretical Approach to Teleological Explanation*, 116 SYNTHESIS 303 (1998).

same (as observed from a macro-level), and even large changes in the disaggregate levels might not constitute a “breakdown” in the system. Of course, a breakdown in a wicked system is much different than a breakdown in a structural system. If a few of the components of a clock radically change, the entire clock system stops working. For wicked systems, these component changes do not bring the entire system to its knees. Tax compliance in an SRA system continues on. It is just that the system is significantly different than it was before. The difference caused by such a breakdown may exist even though macro-level measures—such as aggregate voluntary tax compliance rates—decrease, stay the same, or actually increase. The so-called “component breakdown” might actually create a more compliant system since cause and effect are almost never linear in such systems.

V. DISCUSSION

Tax compliance in an SRA system is arguably closer to the “wicked system” field since prior theories show convincingly that the system is most likely both complicated and complex. The typology created by the heuristic framework hopefully presents a new way of thinking about tax compliance that will help theorists better integrate previous theories and arrive at new ones. While this typology might create clearer thinking about tax compliance on a system level, it unfortunately does not create clearer solutions to problems inherent in the system.

As previously discussed, formal approaches that work in simple, complicated, or complex systems alone seem unable to address many of the problems that tax compliance in a wicked systems presents. That said, one is perhaps left with a hopeless feeling from seeing the problem more clearly, but realizing current tools stand no chance of solving the problem. In some ways, such a feeling is justified. Problems presented by wicked systems are incredibly difficult to solve without sometimes creating more (or worse) problems unintentionally. This is why some scholars suggest that the only real solution to a wicked problem is to create a general feeling of acceptance about the system and its problems (i.e., work on adjusting people’s attitudes to fit the system instead of trying to adjust the system to fit people’s attitudes).⁹⁸ While this solution is reminiscent of ancient stoic philosophy,⁹⁹ it also reminds one of George Bernard Shaw’s comedic musing: “The reasonable man adapts

98. See Churchman, *Wicked Problems*, *supra* note 6, at 141.

99. See, e.g., EPICETUS, THE ENCHIRIDION 20 (Thomas W. Higginson, trans., 1948) (“Demand not that events should happen as you wish; but wish them to happen as they do happen, and you will go on well.”).

himself to the world: the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man.”¹⁰⁰

Another approach is to address sub-problems of tax compliance that happen to fall into the simple, complicated, or complex domains, or to transplant wicked problems to the domain of analytical preference. Doing so allows one to take “snapshots” of tax compliance in the SRA system; however, there is still the task of accurately combining and arranging these snapshots.¹⁰¹ Such an approach could also result in specious results since models based on this approach might very well be incomplete. While formal models are preferred for analysis, all else being equal, the benefit of such an approach might not be worth the price one pays in the model’s detachment from the system’s reality. It is not that formal models such as those related to deterrence theory do not work; it is just that they only work in their restricted domains and not necessarily in others.¹⁰²

Formal models like those put forward by deterrence theory transplant the tax compliance system from its wicked home to the simple domain. This move puts tax compliance under the power and constraints of mathematical methods, which can make for very powerful models. However, as many observed, the result of this move is often a powerful model of a system that is not reflective of reality.¹⁰³

Behaviorist theory emphasizes the complicatedness of the tax compliance system. Behavioral law and economics advocate attempts to understand, design, and steer the tax system as a complicated, but not complex system.¹⁰⁴ This is very similar to the approach an engineer might take in

100. G. BERNARD SHAW, *Maxims for Revolutionists*, in MAN AND SUPERMAN: A COMEDY AND A PHILOSOPHY 225, 238 (1903).

101. See William C. Wimsatt, *Complexity and Organization*, in PSA: PROCEEDINGS OF THE BIENNIAL MEETING OF THE PHILOSOPHY OF SCIENCE ASSOCIATION 67–86 (1974), <http://www.jstor.org/stable/pdf/3698961.pdf?acceptTC=true>.

102. See David Byrne, *Complexity, Configurations and Cases*, 22 THEORY, CULTURE & SOC’Y 95 (2005).

103. See, e.g., Michele Bernasconi & Alberto Zanardi, *Tax Evasion, Tax Rates, and Reference Dependence*, 60 FINANZARCHIV 422 (2004); Arthur Snow & Ronald S. Warren, Jr., *Ambiguity about Audit Probability, Tax Compliance, and Taxpayer Welfare*, 43 ECON. INQUIRY 865 (2005); Gideon Yaniv, *Tax Compliance and Advanced Tax Payments: A Prospect Theory Analysis*, 52 NAT’L TAX J. 753 (1999).

104. See, e.g., Christine Jolls, Cass R. Sunstein & Richard H. Thaler, *A Behavioral Approach to Law and Economics*, in BEHAVIORAL LAW AND ECONOMICS 13 (Cass R. Sunstein ed., 2000); Stephen J. Choi & A. C. Pritchard, *Behavioral Economics and the SEC*, 56 STAN. L. REV. 1 (2003); Russell Korobkin, *The Status Quo Bias and Contract Default Rules*, 83 CORNELL L. REV. 608 (1998); Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism Is Not an Oxymoron*, 70 U.

understanding a machine. By doing this, the tax compliance system is transplanted from its wicked domain to its complicated domain. Although behaviorist theory arguably addresses more of the rich and diverse structure of society than does deterrence theory, it again brings tax compliance into a limiting domain in order to subject the system to certain psychological and sociological analytical tools.

The promise of signaling theory is that it recognizes tax compliance in an SRA system as neither simple nor complicated, but as a complex system. As such, it seems appropriate to employ methods used by complexity scientists to understand tax compliance as a social system.¹⁰⁵ One promising modeling tool of complexity theory is an agent-based model (ABM).

In ABMs, individual agents are explicitly represented, usually by a computer program. The simulated agents interact with each another, and the emergent result is typically some social macrostructure.¹⁰⁶ In some models, no mathematical equations are used at all. In this way, models in the “complex systems” domain of the framework in Figure 1 are on the opposite side of the spectrum of models in the “simple systems” domain. In fact, a common argument for the use of ABMs has been dissatisfaction with rational agent models.¹⁰⁷ This gives signaling theorists in the “complex systems” domain and behaviorists in the “complicated systems” domain a common motivation. Another common aspect of the two domains is a strong assumption of “bounded rationality” of individual agents.¹⁰⁸ As a result, individual agents in

CHI. L. REV. 1159 (2003). *But see* Gregory Mitchell, *Libertarian Paternalism Is an Oxymoron*, 99 NW. U. L. REV. 1245 (2005); Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law and Economics: Its Origins, Fatal Flaws, and Implications for Liberty*, 106 NW. U. L. REV. 1033 (2012).

105. *See, e.g.*, PHILIP BALL, *WHY SOCIETY IS A COMPLEX MATTER: MEETING TWENTY-FIRST CENTURY CHALLENGES WITH A NEW KIND OF SCIENCE* (2012); JOSHUA M. EPSTEIN, *GENERATIVE SOCIAL SCIENCE: STUDIES IN AGENT-BASED COMPUTATIONAL MODELING* (2007); JOSHUA M. EPSTEIN & ROBERT L. AXTELL, *GROWING ARTIFICIAL SOCIETIES: SOCIAL SCIENCE FROM THE BOTTOM UP* (1996); Flaminio Squazzoni, *A (Computational) Social Science Perspective on Societal Transitions*, 14 COMPUTATIONAL MATH. ORG. THEORY 266 (2008).

106. *See* Manhire, *There Is No Spoon*, *supra* note 4, at 24–32 (adapting an ABM originally designed for civil disobedience to tax compliance to show that the emergent macrostructure of tax compliance might have little to do with aggregate probabilities of a taxpayer being audited).

107. *See, e.g.*, Bloomquist, *Agent-Based Simulation*, *supra* note 53, at 51 (“Despite the theoretical appeal of the [deterrence] model it has only limited usefulness for applied research This has prompted calls by a growing number of experts to apply . . . agent-based modeling in order to gain new insights into taxpayer behavior.”) (internal citations omitted).

108. “Bounded rationality” is a term developed primarily in the behaviorist and behavioral economics literature. Briefly, it means that individuals are not strictly rational, but do operate within parameters that corral the irrational behavior

an ABM are given some form of a bounded rationality parameter. Agents typically have states and rules of behavior.¹⁰⁹ To run an ABM, a user populates a two-dimensional lattice or matrix, much like a chess board with many more squares, and observes the results as the agents interact. In this way, the method for solving a complex problem is to spin the model forward in time and allow the solution to present itself.¹¹⁰ A unique facet of ABMs is that the process is as important as the end result. This means social scientists look for a solution in the “steps along the way” as well as the final “equilibrium” of the system.

ABMs have been successful in helping social scientists understand certain simple and well-parameterized systems that show traits of being complex systems.¹¹¹ In tax compliance, the realization that traditional deterrence and behaviorist methods are often inadequate for modeling complex social phenomena has led to a growing interest in ABMs.¹¹² While promising for tax compliance, ABMs still suffer from the danger of models used for deterrence and behaviorist theories in that they transplant tax compliance from its wicked domain to one that is missing a critical element; in this case, complicatedness. ABMs typically assume overly simple rules of agent behavior in the models. Although results often closely align with observable facts, the failure to account for the structural and complicated factors still leaves these models wanting.

If tax compliance in an SRA system is both complicated and complex, it seems reasonable to use a combination of the approaches successfully used in modeling complicated and complex systems. The hope is that such an amalgamation will provide a more integrated analysis of the system. An example of this would be a multi-agent ABM that takes the complicated factors most relevant to major stakeholders in the tax compliance system and analyzes the system’s dynamics through the lens of complexity.

Some are already attempting this integration. Recently, Kim Michael Bloomquist and Matthew Koehler designed an ABM specifically for tax compliance in an attempt to capture dynamic interactions of taxpayers, the tax

sufficiently to predict in the general domain of irrationality that human action will occur. *See generally* John Conlisk, *Why Bounded Rationality?*, 34 J. ECON. LITERATURE 669 (1996).

109. *See, e.g.*, Page, *Computational Models*, *supra* note 8, at 38.

110. Robert L. Axtell, *Why Agents? On the Varied Motivations for Agent Computing in the Social Sciences*, in 1 COMPUTATIONAL SOC. SCI. 1 (Nigel Gilbert ed., 2010).

111. James Alm, *Testing Behavioral Public Economics Theories in the Laboratory*, 63 NAT’L TAX J. 635 (2010) (surveying experimental tests of various applications of behavioral economics to specific study areas of public economics such as tax compliance); Marco A. Janssen & Elinor Ostrom, *Empirically Based, Agent-Based Models*, 11 ECOLOGY & SOC’Y 37 (2006) (discussing the increasing drive in the literature to combine agent-based models with empirical methods).

112. *See sources cited supra* note 4.

authority, employers, and tax preparers.¹¹³ Their ABM is called the “Individual Reporting Compliance Model (IRCM).” It simulates the income tax reporting behavior of a community of 85,000 individual taxpayers and includes many enforcement mechanisms used by tax agencies, such as audits and information reporting, as well as detailed information on the reporting compliance for major income and offset items. Such an approach is essentially a complicated extension of simple complexity modeling. Here, agents, interaction modalities, and environments are designed *a priori* in a fashion that recalls a behaviorist approach, but they are subsequently let loose in a dynamic where emergent patterns arise.

Notwithstanding the promise of ABMs like that of Bloomquist and Koehler, the question remains whether merely combining complicated and complex elements into a single model is enough. Recall that in wicked systems, such combinations do not always hold. Sometimes $1 + 1 = 1$. In wicked systems, the rules and entities are not only hard to uncover, they change as a result of the dynamic itself. There is no neat delineation in wicked systems that allows one to separate the essence (ontology) of *what something is* from the state of *how agents act* at any given time.¹¹⁴ One is constantly changing—and even becoming—the other.

A. Tax Law Simplification

Does this criticism leave any hope for solving tax compliance problems in a wicked system? The major theme of this Article has been one of typology; looking at tax compliance in an SRA system in a new and hopefully meaningful way. The Article does not fully develop all solutions to the problems that accompany tax compliance as a wicked system, but leaves that challenge to future work. Nevertheless, the beginning of a solution might very well include a simplification of the structural (“top-down”) elements of the tax system.¹¹⁵ Such a simplification would necessarily include simplification of the tax laws, regulations, and administrative procedures.

113. Kim Michael Bloomquist & Matthew Koehler, *A Large-Scale Agent-Based Model of Taxpayer Reporting Compliance*, 18 J. ARTIFICIAL SOC’Y & SOC. SIMULATION 20 (2015), <http://jasss.soc.surrey.ac.uk/18/2/20.html>.

114. See David A. Lane & Robert R. Maxfield, *Ontological Uncertainty and Innovation*, 15 J. EVOLUTIONARY ECON. 3 (2005) (providing a more robust explanation of this “ontological uncertainty”).

115. The United States federal tax system has four main elements: (1) an income tax on individuals and corporations; (2) payroll taxes on wages and taxes on self-employment income; (3) estate, gift, and generation-skipping taxes; and (4) excise taxes on selected goods and services. This discussion is limited to the income tax element. See Staff of J. Comm. on Taxation, *Overview of the Federal Tax System as in Effect for 2015* (JCX-70-15), Mar. 30, 2015 (providing an overview of the complete United States federal tax system).

The call for “tax simplification” is not new. In fact, it was one of the major drivers of the Tax Reform Act of 1986.¹¹⁶ However, issues like revenue-neutrality (making sure legislative changes do not increase or decrease net tax revenues), the desire to curb tax avoidance by making taxpayers qualify for preferred status, and the nature of the political process itself left the final 1986 Act short of meeting its simplification objective.¹¹⁷ Almost immediately after it passed, some once again began calling for simplification—this time of the 1986 Act.¹¹⁸

It appears tax simplification is also a hot topic for the beginning of the twenty-first century. The Pew Research Center found that fifty-nine percent of the taxpaying public in the United States thought the tax system was so flawed that it is in need of a complete overhaul.¹¹⁹ National Taxpayer Advocate Nina Olson has repeatedly listed the structural complexity (read “complicatedness”) of the tax code as one of the most serious problems facing the IRS and the taxpaying citizenry.¹²⁰ Professor Ed Kleinbard has written about the economic implications of complicated tax expenditures in a book on the broader fiscal policies of the United States.¹²¹ Professor Michael Graetz has outlined a more explicit tax policy plan to increase return filing simplification without decreasing net tax revenues.¹²² Professor Kathleen DeLaney Thomas recently called for more “user-friendly” tax policies that reduces procedural as well as substantive structural complexity (again, read “complicatedness”).¹²³

116. See generally William G. Gale & Janet Holtzblatt, *The Role of Administrative Issues in Tax Reform: Simplicity, Compliance, and Administration*, in UNITED STATES TAX REFORM IN THE 21ST CENTURY, (George R. Zodrow & Peter Mieszkowski eds., 2000).

117. See *id.*

118. See, e.g., Edward McCaffery, *The Holy Grail of Tax Simplification*, 1990 WIS. L. REV. 1267 (1990); Deborah H. Schenk, *Simplification for Individual Taxpayers: Problems and Proposals*, 45 TAX L. REV. 121, 123 (1989) (“There is no disagreement about the complexity of the Internal Revenue Code.”).

119. PEW RESEARCH CENTER, FEDERAL TAX SYSTEM SEEN IN NEED OF OVERHAUL 1 (Mar. 19, 2015), <http://www.people-press.org/files/2015/03/3-19-15-Taxes-release.pdf>. (“[Fifty-nine] percent [of the public] say ‘there is so much wrong with the federal tax system that Congress should completely change it.’”).

120. See, e.g., NAT’L TAXPAYER ADVOCATE 2012 ANN. REP. TO CONG. at 2 (“The most serious problem facing taxpayers—and the IRS—is the complexity of the Internal Revenue Code.”). See sources cited *supra* note 14.

121. EDWARD D. KLEINBARD, WE ARE BETTER THAN THIS: HOW GOVERNMENT SHOULD SPEND OUR MONEY 247–50 (2015).

122. MICHAEL J. GRAETZ, 100 MILLION UNNECESSARY RETURNS: A SIMPLE, FAIR, AND COMPETITIVE TAX PLAN FOR THE UNITED STATES 197–215 (2010).

123. Kathleen DeLaney Thomas, *User-friendly Taxpaying: The Compliance Case for Tax Simplification*, (Mar. 30, 2015) (unpublished, Maurer School of Law Tax Policy Colloquium), http://www.law.indiana.edu/instruction/tax-policy/doc/thomas_

Advocates of tax simplification have espoused multiple remedies for the currently overcomplicated tax code, regulations, and administrative policies. Some include streamlining administrative processes, reducing redundancy, and allowing less detailed reporting on tax returns.¹²⁴ Others include changing the nature of the current system by moving from an income tax to a consumption tax, or a combination of both.¹²⁵ Still others call for a “blank slate” approach, which would require Congress to surrender its hold on revenue neutrality and embrace a different fiscal foundation, such as zero-based budgeting.¹²⁶ These are just a few of the tax simplification ideas currently in the public debate.¹²⁷

Of course, reducing the complicatedness of the tax code, its regulations, and the administrative procedures of the tax authority will not

user-friendly.pdf.

124. See, e.g., CASS R. SUNSTEIN, *Simpler: The Future of Government* 173–88 (2013). The California Franchise Tax Board’s “ready-return” is often cited as an example of this streamlining. The tax authority prepares returns based on income information it receives through information reporting and then presents the returns to taxpayers for approval. Taxpayers who agree simply sign the completed form. Those who disagree can reject the ready-return and complete their own tax return. See STATE OF CALIFORNIA FRANCHISE TAX BOARD, *ReadyReturn*, <https://www.ftb.ca.gov/readyreturn> (last visited Nov. 11, 2015).

125. See, e.g., Michael J. Graetz, *VAT as the Key to Real Tax Reform*, in *THE VAT READER: WHAT A FEDERAL CONSUMPTION TAX WOULD MEAN FOR AMERICA* 112–22 (Tax Analysts, 2011); ERIC TODER AND JOSEPH ROSENBERG, *EFFECTS OF IMPOSING A VALUE-ADDED TAX TO REPLACE PAYROLL TAXES OR CORPORATE TAXES*, (2010) (report for the Urban-Brookings Tax Policy Center and the Economic Growth Program of the New America Foundation). See Alan Schenk, *Prior U.S. Flirtations with VAT*, in *THE VAT READER: WHAT A FEDERAL CONSUMPTION TAX WOULD MEAN FOR AMERICA* 52–63 (Tax Analysts, 2011) (providing history of the United States considering a consumption tax at the federal level).

126. See, e.g., NAT’L TAXPAYER ADVOCATE 2012 ANN. REP. TO CONG.

Under [this] approach, the starting point would be a tax code without any exclusions or reductions in income or tax. As discussions proceed, tax breaks and IRS-administered social programs would be added only if lawmakers decide on balance that the public policy benefits of running the provision or program through the tax code outweigh the tax complexity challenges that doing so creates for taxpayers and the IRS.

Id. at 15.

127. See WILLIAM W. OLIVER, *WHY WE SHOULD ABOLISH THE INCOME TAX: A GUIDE TO THE PRINCIPAL PROPOSALS* (1995) (describing various alternatives); John K. McNulty, *Flat Tax, Consumption Tax, Consumption-Type Income Tax Proposals in the United States: A Tax Policy Discussion of Fundamental Tax Reform*, 88 CAL. L. REV. 2095, 2112–15 (2000).

necessarily “simplify” the complicated nature of human interaction and individual decision making. In other words, a simplified tax code will not move tax compliance in an SRA system from the wicked corner (high complexity; high complicatedness) to the complex corner (high complexity; low complicatedness), but it might reduce some of the complicatedness by degree. This is especially true if tax compliance is viewed on the heuristic framework as graded quantities (the continuous axes version) instead of binary qualities (the four-field version).¹²⁸ As previously mentioned, tax compliance as a wicked system would still be prone to developing its own emergent and unpredictable properties even with simplified tax laws; however, simplification of the tax code could make certain analyses of the system more tractable. For this reason, a simplified tax code and regulations is a good start in looking for solutions to tax compliance problems in a wicked system.

B. Revise the Definition of Tax Optimality

Another suggestion is to revise what one means by “tax optimality.” Typically, an optimal tax structure is one that maximizes individual utility and minimizes the distortions in that utility introduced by tax laws.¹²⁹ Theorists recognize that truly optimal tax regimes are idealized fictions, so the point is to get as close to that ideal as possible while not expecting to attain it.¹³⁰

Yet an optimal tax theory in practice is much more difficult. There are recent theoretical contributions that recognize the dynamic, stochastic nature of reality, and have attempted modifications of optimal tax theory accordingly. They recognize that individual decisions depend greatly on individual histories and interactions.¹³¹ Since optimal tax theory is based on *individual* utility, it becomes very difficult to keep track of individuals producing at their maximum levels.¹³²

128. See Kornhauser, *A Tax Morale Approach to Compliance*, *supra* note 29, at 608.

129. See Joel Slemrod, *Optimal Taxation and Optimal Tax Systems*, 4 J. ECON. PERSP. 157 (1990).

130. See Pascalis Raimondos-Møller & Alan D. Woodland, *Measuring Tax Efficiency: A Tax Optimality Index*, 90 J. PUB. ECON. 1903 (2006) (introducing an index of tax optimality that measures the distance of some current tax structure from the optimal tax structure in the presence of public goods).

131. See, e.g., Stefania Albanesi & Christopher Sleet, *Dynamic Optimal Taxation with Private Information*, 73 REV. ECON. STUD. 1 (2006); Mikhail Golosov, Narayana Kocherlakota & Aleh Tsyvinski, *Optimal Indirect and Capital Taxation*, 70 REV. ECON. STUD. 569 (2003); Narayana R. Kocherlakota, *Zero Expected Wealth Taxes: A Mirrlees Approach to Dynamic Optimal Taxation*, 73 ECONOMETRICA 1587 (2005).

132. N. Gregory Mankiw, Matthew Charles Weinzierl & Danny Ferris Yagan, *Optimal Taxation in Theory and Practice*, 23 J. ECON. PERSP. 147, 150 (2009)

Still, if tax compliance is a wicked system, more and more complicated models of individual utility maximization and distortion minimization will not achieve system-level representations of tax compliance. Nobel memorial prize winner Friedrich Hayek offers insight here. Hayek makes a distinction between one's ability to predict the behavior of simple and complex systems through modeling.¹³³ For Hayek, one cannot model complex phenomena in the same way sciences such as physics model simple phenomena. Modeling can only predict patterns and not make precise predictions like those made through models of non-complex phenomena.¹³⁴

If Hayek is correct then models of tax optimality, no matter how complicated, will not be able to make specific predictions about the optimality of a tax system. The models can only "predict" the ideally optimal tax structure; they cannot predict how actual structures will maximize individual utility and minimize distortions. If compliance is a wicked system, tax optimality might be better approached by modifying what is meant by optimality.

One way of approaching this change is to see what forms of optimality currently exist for complex systems studies. One such definition is found in the law of "reachable optimality."¹³⁵ First, optimality should be attainable. In this sense, idealized tax optimality becomes nonsensical because, by definition, it cannot be attained. Second, following Hayek, models of tax and compliance optimality can only expect to attain a prediction of the wicked system's patterns, not the precision of maximum individual utility. Then, tax optimality in a wicked system becomes a state of tradeoffs between reachability and idealized optimality. At best, tax optimality becomes a systemic pattern that attains a state of reachable optimality.

What this kind of optimality looks like in practice is currently unknown as the literature is still in a state of debate as to what constitutes reachable optimality.¹³⁶ However, in order for future work to have a hope of

("[D]rawing policy conclusions from a model with a representative consumer can also in some cases lead to trouble.").

133. FRIEDRICH A. VON HAYEK, *The Results of Human Action but Not of Human Design*, in *NEW STUDIES IN PHILOSOPHY, POLITICS, ECONOMICS* 96–105 (1978).

134. FRIEDRICH A. VON HAYEK, *The Theory of Complex Phenomena*, in *STUDIES IN PHILOSOPHY, POLITICS AND ECONOMICS* 22–42 (1967); see also FRIEDRICH AUGUST VON HAYEK, *The Pretense of Knowledge*, in *NOBEL LECTURES IN ECONOMIC SCIENCES* (1969–1980) 181–82 (1992).

135. See, e.g., WENLIANG WANG, *POOLING GAME THEORY AND PUBLIC PENSION PLAN* 207–14 (2015) (discussing "The Law of Reachable Optimality").

136. See ALESSANDRO ABATE, *PROBABILISTIC REACHABILITY FOR STOCHASTIC HYBRID SYSTEMS: THEORY, COMPUTATIONS, AND APPLICATIONS* 146–49 (2008) (describing the disagreement in the literature between optimality as that which optimally solves a set of identified problems, and optimality as simply "that

making it clear, it must begin by redefining optimality in relation to tax compliance as a wicked system.

C. *Investigate Policies That Better Reflect the System*

Unlike policies relating to innately human social issues such as murder or even welfare, tax policy serves an innately governmental purpose that only touches on innately social issue secondarily.¹³⁷ Indeed, tax revenues can fund a governmental system that prosecutes crimes like murder and reallocates essential resources like food, but the principal purpose of tax policy is to fairly and effectively assess and collect revenues for the government. Therefore, tax policy, perhaps more than other areas of public policy, is uniquely positioned to have as its forming principle the notion that it should conform to systems “as they are”—especially when there appears to be no reasonable way to engineer the system into anything better. In other words, tax policy should align itself to the science of the system.

Expanding on the “behavioral realism” theory proposed by Jerry Kang and Kristin Lane, one reaction to recognizing tax compliance as a wicked system is to ensure tax policy aligns itself with the system in such a way so as to achieve its principal goal of fairly and effectively assessing and collecting taxes.¹³⁸ The steps to aligning tax policy with the wicked system “as it exists” are: (1) identify advances in complexity and related sciences that provide more accurate models of tax compliance as a macro system; (2) compare new models with the underlying theories of human behavior and decision-making embedded within tax policies that typically reflect “common sense” based on linear assumptions of cause and effect; and (3) ask tax policymakers and administrators to alter existing tax policies to comport with more accurate models of tax compliance.¹³⁹

As Kang and Lane pointed out, this approach is not as simple as it first appears. The first element—discovering more accurate models—questions what criteria to use in determining what is “more accurate.” Certainly, conjectures such as those put forth in this Article constitute theoretical

which is,” especially in iterative, evolutionary systems); *see also* Marek Grochowski, *The Structure of Reachable Sets and Geometric Optimality of Singular Trajectories for Certain Affine Control Systems in \mathbb{R}^3 : The Sub-Lorentzian Approach*, 20 J. DYNAMICAL CONTROL SYS. 59 (2013).

137. Murder and welfare are social issues even without a formal government, while taxes almost by definition require a governmental entity. *See Exodus* 20:13 (prohibiting murder); *Acts* 4:35 (distributing goods according to individual needs); *Mark* 12:17 (taxes are strictly of the government).

138. Jerry Kang & Kristin Lane, *Seeing Through Colorblindness: Implicit Bias and the Law*, 58 UCLA L. REV. 465, 490–92 (2010) [hereinafter Kang & Lane, *Seeing Through Colorblindness*].

139. *Cf. id.* at 490.

propositions. Even if one could elevate the conjecture that tax compliance is a wicked system to a postulate, it still requires a metric upon which all (or at least most) could agree that the postulate explains tax compliance “more accurately” than currently-accepted models. Further, what degree of certainty as to a new model’s accuracy is required before adopting the model as an underlying assumption of tax policy?¹⁴⁰

The second element—excavating underlying assumptions of current tax policy—is an ancillary result of Part III of this Article. Tax policy, for the most part, assumes a certain degree of accuracy is inherent in deterrence, behavioral, and game theoretic explanations of individual human decision making. However, it is quite possible that the system effect of tax compliance one sees at the macro-level is different than simply the cumulative sum of all individual taxpayer actions.¹⁴¹ Still, more work is necessary to know with greater certainty the degree to which current tax policy is based on these theories. According to Kang and Lane, unearthing these underlying assumptions can be challenging.¹⁴²

The third element—asking tax policymakers to follow the science observing tax compliance as a wicked system—may be the most difficult step. As Kang and Lane observe, this step requires the confluence of “numerous factors, such as the strength of the scientific consensus regarding the emergent model, the size of the gap between the new model and old assumptions, and the consequences of both action and omission.”¹⁴³ Since the law always adopts certain assumptions about human decision-making at the micro and macro-levels, adopting tax policy based on more accurate assumptions should produce results more aligned with initial legislative and administrative intentions. Nevertheless, if tax compliance truly is a wicked system, these results might never be certain and always probabilistic at best. If the underlying assumptions of tax policy are based on a more accurate understanding of the system, the results should be more accurate than policies based on a less accurate model. Certainty is never possible and one should neither seek it nor reject a more accurate understanding of the system simply because of its probabilistic nature.

140. *Id.* at 491 n.112 (citing David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U. L. REV. 1315, 1315 (2003)) (discussing the “precautionary principle” as used in the environmental policy context).

141. Manhire, *There Is No Spoon*, *supra* note 4 (the author explores this idea more thoroughly).

142. Kang & Lane, *Seeing Through Colorblindness*, *supra* note 138, at 491 (citing Gary Blasi, *Advocacy Against the Stereotype: Lessons from Cognitive Social Psychology*, 49 UCLA L. REV. 1241, 1270–71 (2002)) (discussing some of the underlying “folk theories” of discrimination).

143. *Id.* (quoting Kristin A. Lane et al., *Implicit Social Cognition and Law*, 3 ANN. REV. L. & SOC. SCI. 427, 440–41 (2007)).

D. *Going Forward*

This Article hopefully blazes a new path in thinking about tax compliance as a wicked system that will permit sojourners more intelligent and accomplished than this author to comprehend the system better. The potential solutions presented here serve as seeds that can be cultivated more thoroughly in future work.

The idea of tax compliance as a wicked system has strong implications for the debate over the connection between the micro-motivations of individual taxpayers and the macro-social processes evidenced in aggregate data such as the “tax gap.” This is especially true since scale separations and how one scale, whether micro or macro, effects the other is currently unclear in the wicked system paradigm.

The further limitation is that of the human investigator itself. As behaviorists have shown, it is quite difficult to make strict inferences and abstractions about intricate taxpayer motivations and decisions under uncertainty without the help of some formal model.¹⁴⁴ Yet as soon as one discovers an effective analytical model to predict complicated taxpayer behavior, the exercise immediately begins to slide from the “complicated system” domain to the “simple system” domain. In short, formal attempts to understand complicated systems require artificially simplifying some of the complicatedness of those systems.

Human abstraction and intuition are even worse when it comes to complex systems. Until Thomas Schelling showed that the patterns of racial segregation might come from very small preferences concerning homogeneity, human intuition inferred segregation patterns in United States cities as evidence of a mostly racist society.¹⁴⁵ This is just one example of why human intuition can be so dangerous for public policy in general, and tax policy in particular. Non-linearity and emergence—hallmarks of complex systems—throw off policymakers without anyone usually noticing. Humans confidently think they understand tax compliance problems based on unaided intuition and can make tax policies designed to fix a problem even though the problem does not exist in the same way one first assumed. The result can be a completely unintended, yet significant threat to the liberty and general welfare of a citizenry.¹⁴⁶

144. One such helpful model for the “complicated” domain of behaviorist theory is so-called “cumulative prospect theory.” Amos Tversky & Daniel Kahneman, *Advances In Prospect Theory: Cumulative Representation of Uncertainty*, 5 J. RISK & UNCERTAINTY 297, 299 (1992).

145. Schelling, *Dynamic Models of Segregation*, *supra* note 18.

146. *See, e.g.*, Armen A. Alchian, *Uncertainty, Evolution, and Economic Theory*, 58 J. POL. ECON. 211 (1950).

This is not to say that simple, complicated, and complex models have no place in analyzing tax compliance. The opposite is true. Human intuition can be so faulty that policymakers need these tools as cognitive prostheses to aid in decision-making. However, it is important to understand that even the most complex and complicated model is inherently limited since it pulls tax compliance dynamics and structures from the wicked system domain into domains that they does not belong, or at least domains that they do not *fully* belong. Hopefully, this comprehension of the true nature of tax compliance as a wicked system and the benefits and limitations of other models will help tax policymakers, administrators, and scholars going forward.

VI. CONCLUSION

This Article reviewed the importance of voluntary tax compliance to an SRA system. It then reviewed three very different theories of the drivers of tax compliance in an SRA system: deterrence theory, behaviorist theory, and signaling theory. Deterrence theory maps to a system type that is low in both complicatedness and complexity (a simple system). Behaviorist theory maps to a system type that is high in complicatedness, but low in complexity (a complicated system). Signaling theory maps to a system type that is low in complicatedness, but high in complexity (a complex system). The Article also offers a heuristic framework for this typology that can be regarded as discrete or continuous.

Each of these three theories has elements that ring true when compared with experience. Yet they also each appear to have gaps that do not account for everything one sees in reality. This Article seeks to reconcile these gaps by proposing that the tax compliance system one experiences in reality maps to a system type that is both high in complicatedness and complexity (a wicked system). Wicked systems present problems for mathematical modeling because of their complicatedness and problems for behavioral psychological modeling because of their complexity. Solutions to problems in wicked systems often create more and different problems than the ones sought to be solved. If tax compliance in an SRA system is truly a wicked system, tax policymakers and administrators must understand the perils of seeking linear solutions to problems in the system lest they unintentionally create more (or worse) problems than before.

While this Article seeks to clarify the elements of tax compliance as a wicked system, it does not go so far as to suggest proven approaches to tax policy problems. Generally, solutions to wicked problems have the best chance of succeeding if the system is “chunked” into pieces, although this is by no means guaranteed. Another perhaps less attractive solution is to work on stakeholder morale instead of attempting to re-engineer the wicked system. Creating a “good feeling” about the system—even with its inherent problems—among those affected by it does not solve all underlying tax policy

issues, but it does create an atmosphere of acceptance of the system, warts and all. Either way, tax administrators and policymakers must first understand the system in which they operate if they seek to find the best (even if imperfect) solutions and approaches to the problems inherent in a wicked tax system. It seems clear that some new ideas are needed here.