

CYBER–SYSTEMICS, SYSTEMIC GOVERNANCE AND DISRUPTION OF THE CRIMINAL LAW

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Criminal law regulators face difficulties in adapting to technological change. They must often operate in environments of significant uncertainty, with changing policy aims and legislative provisions that fail to ‘move with the times’. Rather than engaging with robust, let alone radical theoretical examination of their actions and structure, regulatory organisations struggle to enforce laws in communities affected by technological or systemic change, often leading to claims of overcriminalisation, inadequacy, regulatory overreach or inconsistency. This article suggests that dealing with disruptive criminality solely through legal instruments is a policy failure. Instead, a radical new framework is proposed, embedded in cybernetics (a transdisciplinary approach to exploring regulatory systems). Such a framework — systemic governance — offers a substantially altered way of managing regulatory relationships that resists disruptive change and challenges regulators to find new ways of engaging with the population they seek to influence.

I INTRODUCTION

Over the past 20 years, criminal law regulators¹ have experienced a range of difficulties in dealing with crime in the face of increasingly evolving technology. The uptake by society of digital transactions, the increasing diversity of mobile devices, and the advent of the Big Data revolution present new and diverse policy challenges for the sciences of regulation, crime control, policing and law enforcement. Yet many policymakers and regulatory agencies continue to adhere to tried and trusted theoretical constructs without considering more radical opportunities for strategic transformation. The approach taken in this article is a

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¹ For the purposes of this article, ‘criminal law regulators’ are those whose purpose is to engender compliance by their regulated populations with legislation that the legislature warrants sufficiently important to protect with punitive sanctions. Although such regulators may also have access to administrative, disciplinary or civil sanctions, those sanctions traditionally invoke a protective jurisdiction.

proposal for such consideration. It advances a novel approach — ‘systemic governance’² — to regulation by government bodies, which is founded in cyber-systemic³ theoretical and methodological practice. The approach is informed by the inevitable uncertainty inherent in the types of challenges faced by modern criminal law regulators.

This article proceeds as follows. In Part II, regulation is discussed, and disruption is introduced as a fundamental policy challenge by virtue of its creation of regulatory uncertainty. In Part III, systemic governance as a response mechanism is introduced, its use in two Australian contexts explored, and several lessons learned in those contexts noted. Part IV then discusses the ways in which systemic governance can be articulated within a criminal law enforcement context. Finally, in Part V, the article concludes by suggesting a number of domains for further scholarly inquiry.

II THE ISSUE OF DISRUPTION

For some years now, governments, particularly in Australia, have been expressing various views on the future of regulatory activity.⁴ One of the most public discussions occurred after 4 February 2019, when the report of the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry was tabled in Australia’s Parliament.⁵ That report detailed a litany of bad behaviour on the part of banks and other financial institutions, such as the charging of deceased clients for financial advice and providing loans to

² The term is defined as ‘institutional change to involve the deliberate, or purposeful, replacement of existing formal and informal institutions or the creation of new institutions in a socially desired way’: Raymond L Ison, Kevin B Collins and Philip J Wallis, ‘Institutionalising Social Learning: Towards Systemic and Adaptive Governance’ (2015) 53 *Environmental Science & Policy* 105, 106.

³ Cyber-systemics is defined here as the use of rational, dynamic and holistic approaches to guide responses to social and environmental feedback, much like a sailor steers a ship. See Ray Ison, Jason Alexandra and Philip Wallis, ‘Governing in the Anthropocene: Are There Cyber-Systemic Antidotes to the Malaise of Modern Governance?’ (2018) 13 *Sustainability Science* 1209.

⁴ Peter Homel, *The Whole of Government Approach to Crime Prevention* (Australian Institute of Criminology Trends and Issues in Criminal Justice Series No 287, November 2004); Australian Taxation Office, *Targeting Tax Crime: A Whole-of-Government Approach* (September 2012) <<https://www.ato.gov.au/assets/o/104/300/362/844028fb-8bb1-447d-a2f3-b655496bf442.pdf>>; Department of Home Affairs, *Commonwealth Serious Organised Crime Strategic Framework: Overview* (November 2016) <<https://www.homeaffairs.gov.au/criminal-justice/files/organised-crime-strategic-framework-overview.pdf>>; Joint Committee on Law Enforcement, Commonwealth Parliament, *Inquiry into Human Trafficking* (Final Report, 18 May 2017) 9.

⁵ Commonwealth, *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry* (Final Report, 2019) vol 1 (‘Royal Commission 2019 Report’).

customers who had no feasible means of repayment. However, it was also scathingly critical of the financial regulators — the Australian Securities and Investments Commission ('ASIC') and the Australian Prudential Regulatory Authority ('APRA') — finding that 'the law was too often not enforced at all, or not enforced effectively'.⁶ In response to the Royal Commission's findings, ASIC was quick to announce that it had changed its enforcement approach to one dubbed 'why not prosecute'?⁷

ASIC's position is understandable, especially in response to such fierce criticism. Many modern regulators utilise Ayres and Braithwaite's compliance pyramid, derived from the theory of responsive regulation.⁸ ASIC's compliance pyramid (shown in Figure 1) draws its name from the theoretical construct of sanctions, which is 'intended to reflect the theoretical less frequent use of the most severe sanctions, which form the apex of the pyramid, compared to the persuasion-focused methods of resolution that form the pyramid's base'.⁹

⁶ Ibid ch 7, 413.

⁷ Stephen Long, 'ASIC eyeing criminal prosecutions after royal commission', *ABC News* (online, 19 February 2019) <<https://www.abc.net.au/news/2019-02-19/asic-says-it-is-getting-tough-post-banking-royal-commission/10826442>>.

⁸ Ian Ayres and John Braithwaite, *Responsive Regulation: Transcending the Regulation Debate* (Oxford University Press, 1992).

⁹ Aakash Desai and Ian Ramsay, 'The Use of Infringement Notices by ASIC for Alleged Continuous Disclosure Contraventions: Trends and Analysis' (University of Melbourne Legal Studies Research Paper No 547, 2011) 22–3.

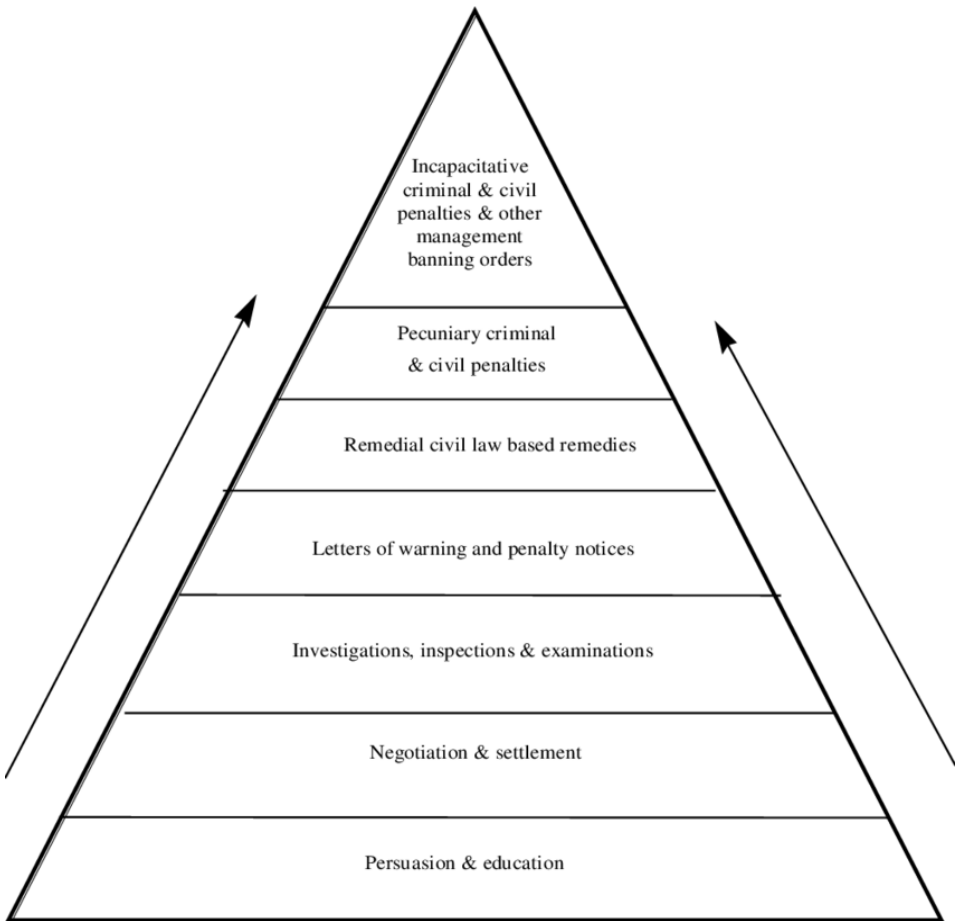


Figure 1 — The ASIC compliance model¹⁰

Ayres and Braithwaite's responsive regulation suggests that criminal law regulators should only escalate their sanctions based on persistent non-compliance or recalcitrance, thus reserving the 'big guns'¹¹ of criminal prosecution for the most high-risk or egregious offenders. Objectively however, ASIC has *lowered* the threshold at which it will apply the peak of its enforcement powers, such that those whose conduct attracts criminal sanction under

¹⁰ George Gilligan, Paul Ali and Andrew Godwin, 'An Analysis of Penalties under ASIC Administered Legislation: Scoping the Issues' (Centre for International Finance and Regulation and Melbourne Law School, Working Paper No 71, 31 May 2015), 16.

¹¹ See John Braithwaite, 'Convergence in Models of Regulatory Strategy' (1990) 2(1) *Current Issues in Criminal Justice* 59.

corporations law will now be brought to account through the courts, rather than having to comply with some form of enforceable undertaking. However, when such an approach is viewed subjectively by a potential offender, the penalty itself has not changed, and neither has the possibility of being caught or the culture of the regulated environment. In the words of the former chairman of the United Kingdom Financial Standards Authority, holding people accountable to legislative principles ‘does not work with individuals who have no principles’.¹²

The historic failings of ASIC are therefore broader than simply an unwillingness to prosecute, or, perhaps more accurately, an over-subscription to the use of enforceable undertakings. The Royal Commission was also clear in its views on the challenges of ASIC’s participation in and promotion of self-regulation. With self-regulation, participants are responsible for regulating each other’s conduct by approbation, custom and honourable adherence to best practice in a manner often referred to as ‘government by gentlemen’.¹³ Unfortunately, when parties are left to their own devices in an environment where it is logistically impossible for ASIC to constantly oversee and monitor every possible individual to which the corporations law applies or could apply,¹⁴ this has resulted in massive under-reporting of relevant incidents — from charging clients who were deceased and giving inadequate financial advice, to failures to report suspected financial crime and money laundering.¹⁵

ASIC’s historic failures present an interesting lens through which to examine the nature of regulatory practice as a system, and for determining whether that system remains fit for purpose. Whether regulation is described as a mechanism of control by the State over certain aspects of our lives that have ‘shared meaning or value’,¹⁶ the ‘realization of public goals’ through interventionism,¹⁷ or a

¹² Julia Finch, ‘No More Mr Nice Guy — Hector Sants is Dirty Harry’, *The Guardian* (online, 13 March 2009) <<https://www.theguardian.com/business/2009/mar/13/fsa-hector-sants-london>>.

¹³ Michael Moran, *The British Regulatory State: High Modernism and Hyper-Innovation* (Oxford University Press, 2003) 7.

¹⁴ That ASIC is incapable of surveilling everyone, and must therefore pick and choose its regulatory targets, is observed by Dimity Kingsford Smith, ‘A Harder Nut to Crack? Responsive Regulation in the Financial Services Sector’ (2011) 44(3) *University of British Columbia Law Review* 698; Vicky Comino, ‘Towards Better Corporate Regulation in Australia’ (2011) 26(1) *Australian Journal of Corporate Law* 36; Commonwealth, *Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry* (Interim Report, 2018) vol 1, 271–2.

¹⁵ Royal Commission (n 5) 107.

¹⁶ Philip Selznick, ‘Focusing Organizational Research on Regulation’, in Roger Noll (ed), *Regulatory Policy and the Social Sciences* (University of California Press, 1985), 383.

¹⁷ Tom Christensen and Per Laegreid, ‘Agencification and Regulatory Reforms’ (Paper presented to the SCANCOR/SOG Workshop Automization of the State: From Integrated Administrative Models to Single Purpose Organisations, Stanford, 1–2 April 2005), 3.

process of rule-creation and enforcement,¹⁸ such regulation inevitably involves the exercise of social or State influence in the spheres of private or economic life.¹⁹ Regulated entities find aspects of their behaviour constrained or shaped by legal, economic or normative strictures,²⁰ and thus their behaviour is shaped towards producing outcomes in line with the State's expectations of behaviour (see Figure 2).²¹



Figure 2 — The process of regulation

Yet if the process of regulation as outlined in Figure 2 is the result of this system, then non-compliance surely indicates a failure of the system. Even if minor, unintended or inconsequential, each instance of inability or unwillingness of a regulated environment to do what is required of it by law or custom indicates a failure in the regulatory system as a whole. After all, ‘if the system is not doing what it is supposed to do — when it is not fulfilling its purpose — it is failing’.²² There has been a flurry of scholarship suggesting that contemporary governance

¹⁸ Christopher Hood, Henry Rothstein and Robert Baldwin, *The Government of Risk: Understanding Risk Regulation Regimes* (Oxford Scholarship Online, 2001); Karen Yeung, ‘Design for the Value of Regulation’, in Jeroen van den Hoven, Pieter E Vermaas and Ibo van de Poel (eds), *Handbook of Ethics, Values, and Technological Design: Sources, Theory, Values and Application Domains* (Springer, 2015) 447–72.

¹⁹ Julia Black, ‘What is Regulatory Innovation?’, in Julia Black, Martin Lodge and Mark Thatcher (eds), *Regulatory Innovation* (Edward Elgar, 2005); Robert Baldwin, Martin Cave and Martin Lodge, *Understanding Regulation: Theory, Strategy and Practice* (Oxford University Press, 2nd ed, 2012) 3.

²⁰ Peter Grabosky, ‘Beyond the Regulatory State’ (1994) 27(2) *Australian & New Zealand Journal of Criminology* 192; Julia Black, ‘Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a “Post-Regulatory” World’ (2001) 54(1) *Current Legal Problems* 103; Peter Grabosky, ‘Beyond Responsive Regulation: The Expanding Role of Non-State Actors in the Regulatory Process’ (2013) 7(1) *Regulation & Governance* 114.

²¹ Cary Coglianese, *Measuring Regulatory Performance* (OECD Expert Paper No 1, August 2012).

²² Sandro Luis Schlindwein and Ray Ison, ‘Confronting Total Systemic Failure? The May 2018 Truckers’ Strike in Brazil’ (2019) 37(1) *Systems Research and Behavioural Science* 119, 120.

systems are no longer achieving their primary role — that is, the achievement of compliance (whether with legislative requirements or social and economic norms).²³

Therrien et al describe exactly such failures in the context of the Lac-Mégantic rail disaster of 2013. Lac-Mégantic, a small province in Quebec, was the site of a derailment and explosion of a train transporting over seven million litres of petroleum, killing 47 and destroying half of the city. There were a number of indications prior to the accident that a governance failure was occurring or about to occur, and blame was attributed variously to the rail operator, the train conductor and the train's mechanics. The rail operator ultimately declared bankruptcy when it could not afford the clean-up costs. Therrien et al suggest that

[t]he refusal or inability of the risk governing network to act on these weak and strong signals of wicked problems may originate in the lack of efficiency to govern loosely coupled problems. In such context where the ability of regulatory authorities to fulfil their mission to manage risk and protect the population was repeatedly criticised, these organisations found themselves in a legitimacy crisis.²⁴

The term 'wicked problems' employed by Therrien et al has a specific meaning and a long history.²⁵ It was originally coined by mathematician Horst Rittel to describe complex, uncertain, multi-jurisdictional problems with no easily designed solutions: a wicked problem is one involving a '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'.²⁶ There are numerous spheres of industry where illicit or unwanted behaviour cannot be targeted (or targeted adequately) by a regulatory process to produce outcomes

²³ Stein Ringen, *The Economic Consequences of Mr Brown: How a Strong Government was Defeated by a Weak System of Governance* (Bardwell Press, 2009); Ed Straw, *Stand and Deliver: A Design for Successful Government* (Treaty for Government, 2014); Paul Kelly, *Triumph and Demise: The Broken Promise of a Labour Generation* (Melbourne University Press, 2014); John Micklethwait and Adrian Wooldridge, *The Fourth Revolution: The Global Race to Reinvent the State* (Penguin Books, 2014); Laura Tingle, 'Political Amnesia. How We Forgot How to Govern' (2015) *Quarterly Essay* 60; RW Johnson, *How Long Will South Africa Survive? The Looming Crisis* (Jonathan Ball, 2015).

²⁴ Marie-Christine Therrien et al, 'Tightly Coupled Governance for Loosely Coupled Wicked Problems: The Train Explosion in Lac-Mégantic Case' (2016) 19(4) *International Journal of Risk Assessment and Management* 260, 261–2.

²⁵ See, eg, C West Churchman, 'Wicked Problems' (1967) 14(4) *Management Science* 14, B141; Horst Rittel and Melvin M Webber, 'Dilemmas in a General Theory of Planning' (1973) 4(2) *Policy Sciences* 155; Richard Buchanan, 'Wicked Problems in Design Thinking' (1992) 8(2) *Design Issues* 5.

²⁶ Churchman (n 25) B142.

because the wicked problem has caused the displacement of the law or its intended implementation.²⁷

Regulatory challenges can be heightened when the causes or effects of an original wicked problem become exacerbated by the influence of new technology.²⁸ As an example, the supply of illicit narcotics has been a public-policy nightmare since the early 1800s and became such a problem that President Nixon famously declared the ‘war on drugs’ in 1971.²⁹ Forty years later, the popularisation of the darkweb nurtured an environment of anonymity and legal impunity such that unlawful marketplaces — notably Silk Road and Agora — operated brazenly, even though the legal provisions prohibiting the supply of narcotics were the same in 2011 as they were in 1971.³⁰ Offences relating to domestic violence might have had a more ponderous emergence in legal history, but likewise they demonstrate a wicked problem made more difficult by technological advance.³¹ Bennett Moses describes this phenomenon: ‘copying digital music is still a breach of copyright ... but ease of copying has affected social norms so that rates of copying have increased despite copyright laws’.³² Commissioner Hayne was clearly live to this issue, indicating that many of the complications which the Royal Commission into Financial Services dealt with seemingly arose from ‘the present uncertainty about the impact of technological developments ... [T]he industry itself will very probably look very different in five years’ time.’³³ In summarising the Commission’s findings, however, he cautioned against using disruption as a pejorative. He stated quite firmly that, without context, fears of disruption were ‘nothing but a naked appeal to fear of the future’.³⁴ Yet disruption (and the uncertainty it causes) poses a very real and live threat to the ongoing operations of many criminal law regulators.

²⁷ Bert-Jaap Koops, ‘Ten Dimensions of Technology Regulation: Finding Your Bearings in the Research Space of Emerging Technologies’, in Morag Goodwin, Bert-Jaap Koops and Ronald Leenes (eds), *Dimensions of Technology Regulation* (Wolf, 2010) 309–24; see also Brendan Walker-Munro, ‘A Case for Systemic Design in Criminal Law Techno-Regulation’ (2019) 43(5) *Criminal Law Journal* 306 (‘Systemic Design in Criminal Law Techno-Regulation’).

²⁸ In this article, the term ‘disruption’ is used to describe the circumstances that arise when a regulator becomes distanced from the target of their enforcement by new developments in technology, systems, practices or customs.

²⁹ See Tom Wainwright, *Narconomics* (PublicAffairs, 2017).

³⁰ Walker-Munro, ‘Systemic Design in Criminal Law Techno-Regulation’ (n 27) 309–10.

³¹ Carolyn Briggs, ‘An Emerging Trend in Domestic Violence: Technology-Facilitated Abuse’ (2018) 15(1) *Australian Journal of Child and Family Health Nursing* 2.

³² Lydia Bennett Moses, ‘How to Think about Law, Regulation and Technology: Problems with “Technology” as a Regulatory Target’ (2013) 5(1) *Journal of Law Innovation and Technology* 1, 8.

³³ *Royal Commission 2019 Report* (n 5) 195.

³⁴ *Ibid* 19.

The uncertainty created by technological disruption can be defined, examined and articulated in many ways. For present purposes, it is perhaps apposite to note that two broad classes of uncertainty may exist: uncertainty from the *regulator* (which is driven by the regulator and is 'top-down' in nature), and uncertainty about the *regulation* (which is driven by the population and is 'bottom-up' in nature). Uncertainty from the regulator manifests itself when the regulator cannot or does not properly detect and act on matters falling within its regulatory purview. Uncertainty about the regulation, on the other hand, arises most frequently in circumstances involving incomplete law because, '[w]hen law is incomplete, neither actors nor law enforcers can stipulate whether a particular action will fall within the scope of a law and will therefore face sanctions'.³⁵ Both classes of uncertainty become heightened in fields where the technology is untested and no contiguous principles exist for assessing how the regulator will act.³⁶ Under both forms of uncertainty, the regulatory system exhibits signs of strain, limitation and, ultimately, failure.

The starting point of examination, therefore, must be to frame regulation as a system, with wicked problems as their target, irrespective of what industry is being regulated. This approach is necessary because, as individuals and as a society, when we cannot solve a problem ourselves (by resort to existing legal solutions), we usually ask regulators to solve problems for us.³⁷ Therefore, the concept of framing — the way that we choose to view, articulate and define problems that require some form of governance response — becomes critically important to the debate. As Ison, Collins and Wallis explain, 'how situations are framed is a choice that can be made' by regulators (amongst others) in response to wicked problems, and this framing is important because '[f]raming choices, knowingly or not, direct thinking and practice'.³⁸

III THE POSITS OF CYBER-SYSTEMICS AND SYSTEMIC GOVERNANCE

An increasing number of scholarly works have examined complex, multi-faceted, multi-causal issues with a range of actors operating through and across local, state, national and transnational boundaries (in other words, wicked problems).

³⁵ Chenggang Xu and Katharina Pistor, *Law Enforcement under Incomplete Law: Theory and Evidence from Financial Market Regulation* (Discussion Paper No TE/02/442, London School of Economics and Political Science, December 2002) 2.

³⁶ Nicole Mirjanich, 'Digital Money: Bitcoin's Financial and Tax Future Despite Regulatory Uncertainty' (2014) 64(1) *DePaul Law Review* 213.

³⁷ Xu and Pistor (n 35) 32–3.

³⁸ Ison, Collins Wallis (n 2) 106.

These problems have included the emergence of drug-resistant bacteria in health settings, illicit drugs and smart city frameworks.³⁹ In response, regulatory systems are almost always designed to confront these types of wicked problems head-on.⁴⁰ These systems of regulation generally fail because:

1. they do not actually achieve compliance, as they usually fail to deter those who do not comply;⁴¹
2. they do not consider the strategic or systemic effects of how their intervention may make the problem worse;⁴² and/or
3. they lack the flexibility to respond in a meaningful and agile way to contemporary issues and become mired in arguments with political, legal or financial overtones.⁴³

Take as an example the chequered history of financial services regulation in the United Kingdom over the past 50 years. Until 1998, regulatory control over the banking sector was exercised by the Bank of England. However, its authority was so significantly undermined by the collapse of Johnson Matthew Bankers, BCCI and Barings Bank in the late 1990s that the Financial Services Authority ('FSA') was created to take over, seemingly replacing nine other regulatory agencies with similar mandates.⁴⁴ In the early-to-mid 2000s, the FSA adopted a 'light touch' regulatory approach that failed to adequately spot and address the failures of Northern Rock's liquidity crisis or the ill-fated purchase of ABN Amro by the Royal Bank of Scotland.⁴⁵ The FSA was disbanded again in 2013 and replaced by three separate regulators.⁴⁶

³⁹ John Alford and Brian W Head, 'Wicked and Less Wicked Problems: A Typology and a Contingency Framework' (2017) 36(3) *Policy and Society* 397; Johan Colding, Stephan Barthel and Patrik Sörqvist, 'Wicked Problems of Smart Cities' (2019) 2(4) *Smart Cities* 512. See also Ray Ison, *Systems Practice: How to Act in Situations of Uncertainty and Complexity in a Climate-Change World* (Springer, 2017).

⁴⁰ Nicola Lacey, 'Criminalisation as Regulation: The Role of Criminal Law' (Oxford Legal Studies Research Paper No 50, 2004) 144–67.

⁴¹ Xu and Pistor (n 35) 6.

⁴² Jon Barnett and Saffron O'Neill, 'Maladaptation' (2010) 2(20) *Global Environmental Change* 211.

⁴³ John Micklethwait and Adrian Wooldridge, *The Fourth Revolution: The Global Race to Reinvent the State* (Penguin, 2015).

⁴⁴ Marianne Ojo, *The Financial Services Authority: A Model of Improved Accountability?* (MPRA Paper No 50, University of Munich, 2016).

⁴⁵ Jill Treanor, 'Farewell to the FSA — and the Bleak Legacy of the Light-Touch Regulator', *The Guardian* (online, 24 March 2013) <<https://www.theguardian.com/business/2013/mar/24/farewell-fsa-bleak-legacy-light-touch-regulator>>.

⁴⁶ Noam Noked, *Financial Services Act 2012: A New UK Regulatory Framework* (Harvard Law School Forum on Corporate Governance, 24 March 2013) <<https://corpgov.law.harvard.edu/2013/03/24/financial-services-act-2012-a-new-uk-financial-regulatory-framework/>>.

As earlier mentioned, Therrien et al confront the wicked problem paradigm through the lens of the Lac-Mégantic rail disaster in 2013, and in particular three themes (or narratives) — networked governance, sense-making and risk-regulation — that emerged following the post-incident investigation, both to explain what went wrong and to minimise the risk of similar events occurring in the future. The authors' analysis is insightful not in its analysis of the disaster itself, but rather in the framing of each of these narratives in the face of uncertainty and in its observation that each of these narratives 'presents a partial analytical response to system failure for the management of wicked problems'.⁴⁷ By bringing the salient points of these three narratives together, it is possible to elicit a cogent series of principles derived from 'cyber-systemics' that have clear application to regulatory problems. These principles can then be embedded at the core of the model of 'systemic governance' proffered in this article.⁴⁸ The precise meaning of these terms, and the relationship between them, requires further explanation.

A *Cyber-Systemics*

'Cyber-systemics' is the application of the principles of 'cybernetics' — that is to say, a transdisciplinary approach to exploring regulatory systems. Put simply, the concept of cyber-systemics recognises that our world is composed of multi-layered ecosystems with complex and complicated interrelationships, which interrelationships are important for understanding how an environment acts normally and how it responds to intervention. Ison and Schlindwein describe the challenge in terms of environmental regulation, where wicked problems are described as 'problems of relationship', and where uncertainty arises because of failures to properly recognise or maintain such important relationships.⁴⁹ From the regulatory perspective, regulators who enact governance with cyber-systemics do so despite uncertainty because they recognise, respect and build on the linkages between the environment, society and the individual, and seek to leverage different elements of the relationships in order to achieve behavioural change. Perhaps the easiest analogy of cyber-systemics to regulatory practice is

⁴⁷ Therrien et al (n 24) 264–70.

⁴⁸ In doing so, the term 'systemic governance' is distinguished from 'systematic governance', the latter of which Ison, Alexandra and Wallis (n 3) caution involves 'linear, step-by-step thinking and action, whereas systemic ones are holistic comprising relationally dynamic thinking and acting' (at 1213).

⁴⁹ Ray Ison and Sandro Schlindwein, 'Navigating through an "Ecological Desert and a Sociological Hell": A Cyber-Systemic Governance Approach for the Anthropocene' (2015) 44(6/7) *Kybernetes* 891.

the idea that a regulator stands as ‘a helmsperson (sailor) steering, or charting, an ongoing viable course in response to feedback (from currents, wind, etc) and in relation to a purpose that is negotiated and renegotiated within an unfolding context — that is, in response to uncertainty’.⁵⁰ While some comparison to existing regulatory scholarship is inevitable,⁵¹ cyber-systemics is a new paradigm because it focuses on the complex nature of relationships rather than seeking to throw resources at a problem and trying to solve it. Cyber-systemic design is a useful tool to consider when crafting regulators and regulator responses because the concept is ‘intended for challenges characterised by complexity, uniqueness, value conflict, and ambiguity over objectives’.⁵² A key concept of systemics is interdependence: webs of reciprocal influence between parts of a greater whole and their environment.⁵³ Therrien et al concisely explain:

These wicked problems are problems spread out, in and across networks of organisations, public and private, that stay unattended or unnoticed, and being loosely coupled one with the other. A crisis emerges when several problems happen simultaneously and become simultaneously tightly coupled to generate disastrous consequences.⁵⁴

B Systemic Governance

Systemic governance involves the use of cyber-systemic approaches (ie relationship-building) to craft systems that embed relationship-management as a core of regulatory practice. The concepts of cyber-systemics and systemic governance are closely linked. However, whereas cyber-systemics describes the application of the principles of cybernetics (such as using requisite variety as well as the steering analogy of Ison, Grant and Bawden mentioned above) in a systemic way to ensure complete coverage of the regulatory target, ‘systemic governance’ uses the principles of cyber-systemics to achieve a regulatory or governance outcome. In effect, then, systemic governance is ‘governance using cyber-systemics’.

Systemic governance becomes important because many of the solutions to wicked problems are regulatory in nature. Policymakers and politicians frame

⁵⁰ Ray Ison, Andrea Grant and Richard Bawden, ‘Scenario Praxis for Systemic Governance: A Critical Framework’ (2014) 32(4) *Environment Planning C: Government and Policy* 623, 626.

⁵¹ See, eg, John Braithwaite, ‘The Essence of Responsive Regulation’ (2011) 44(3) *University of British Columbia Law Review* 475.

⁵² Alex J Ryan, ‘A Framework for Systemic Design’ (2014) 7(4) *FORMakademisk* 1, 12.

⁵³ *Ibid* 2.

⁵⁴ Therrien et al (n 24) 262.

wicked problems as issues, challenges or puzzles in need of solutions, and they craft solutions that frequently rely on various flavours or colours of prohibition and the invocation of criminal sanctions. There is little doubt that the threat of punishment and criminal sanctioning are effective — the literature on deterrence theory is largely united on this point — but deterrent methodologies inevitably become ‘subject to interpretation by different rationalities ... [Deterrents are] controversial and difficult to implement’.⁵⁵ Although the academic studies in using cyber-systemic approaches are in their infancy, there is some evidence emerging in the literature that considering social problems from the holistic perspective of their wickedness is starting to bear fruit.⁵⁶ The approach proposed here can be seen in Figure 3, and is articulated in other work on the subject.⁵⁷

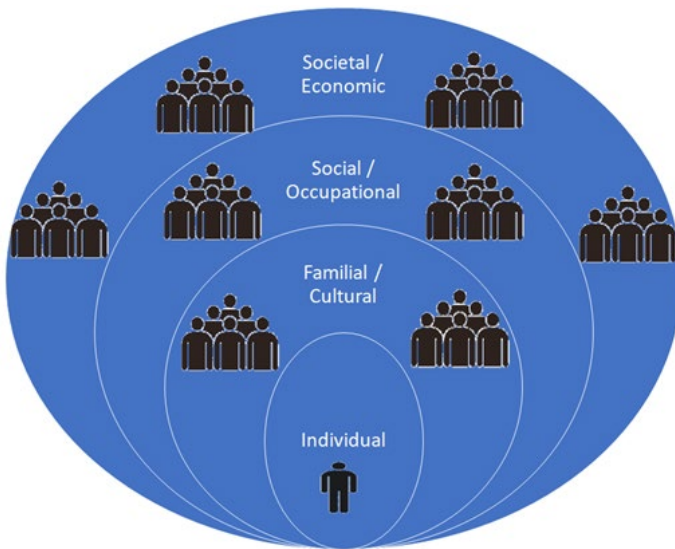


Figure 3 — A model of systemic governance as ‘recognition of environment’⁵⁸

⁵⁵ Robert F Durant, ‘Institutional Values and the Future of Administrative State’, in David H Rosenbloom and Howard E McCurdy (eds), *Revisiting Waldo’s Administrative State: Constancy and Change in Public Administration* (Georgetown University Press, 2006) ch 10, 180.

⁵⁶ Patamawadee Jongruck, ‘Network Governance and the Contemporary Opium Problem in Northern Thailand’ (2019) 8(4) *Asian Education and Development Studies* 364; Malin Olsson, *Public Collaborations and Wicked Issues: A Study of Collaboration Structures in Dealing with Violence in Close Relationships* (PhD Thesis, Lund University, May 2019).

⁵⁷ Walker-Munro, ‘Systemic Design in Criminal Law Techno-Regulation’ (n 27) 316–18.

⁵⁸ Adapted from Peter H Jones, ‘Systemic Design Principles for Complex Social Systems’, in Gary Metcalf (ed), *Social Systems and Design* (Springer, 2014) 91.

The model in Figure 3 is constructed thus: at its centre sits a human being who, as Lessig would state, ultimately makes the rational decision whether or not they will comply with a given set of rules.⁵⁹ Around the individual sits a web of close relationships that bear the strongest influence on their behaviour (either for or against the ruleset). These relationships may be family-oriented or culturally oriented, and provide a series of normative and supportive mechanisms for the individual's behaviour. They also frame in some ways how the individual will respond to certain types of regulatory interventions. As we move outwards in rings, the relationships involve more people, but they are more loosely connected to the individual. Influence is less easily exerted in these outer relationships, and the impact of a regulatory intervention on one or more of them is less likely to be felt by the individual at the centre. Finally, the outermost ring of relationships supports the general 'feeling' of the community or society at large, and the normative influences thereof.

By adopting such a model for regulatory interventions, we can see that the management and maintenance of relationships becomes increasingly important by regulators in a cyber-systemic approach. We can see that the nature, duration and influence of each relationship will differ where different crime types are considered — a finding supported by crime control literature.⁶⁰ Conversely, regulators taking a cyber-systemic approach can map and target the webs of influence around a particular individual, seeking to interrupt flows in commodity and power between individuals and segments of their closest influence groups.⁶¹ Cyber-systemics also involves utilising the influence of environment, and broader elements of the holistic society, which is a topic generally ignored in criminological studies.⁶² A cyber-systemic approach is also consistent with both the rule of law and the protection of fundamental civil rights, such as privacy, autonomy, fairness and transparency.⁶³ This is because governance through

⁵⁹ Lawrence Lessig, 'The Zones of Cyberspace' (1996) 48(5) *Stanford Law Review* 1403, 1408.

⁶⁰ Mark Andrejevic, 'To Preempt a Thief' (2017) 11 *International Journal of Communication* 879.

⁶¹ Jeffrey S McIlwain, 'Organized Crime: A Social Network Approach' (1999) 32(4) *Crime, Law and Social Change* 301; Gail Wannenburg, 'Links between Organised Crime and Al-Qaeda' (2003) 10(2) *South African Journal of International Affairs* 77; Carole Gibbs, Edmund F McGarrell and Mark Axelrod, 'Transnational White-Collar Crime and Risk: Lessons from the Global Trade in Electronic Waste' (2010) 9(3) *Criminology & Public Policy* 543.

⁶² David Weisburd, Cody Telep and Anthony Braga, *The Importance of Place in Policing: Empirical Evidence and Policy Recommendations* (Swedish National Council for Crime Prevention, 2010); Pamela Wilcox and John Eck, 'Criminology of the Unpopular: Implications for Policy Aimed at Payday Lending Facilities' (2011) 10(2) *Criminology & Public Policy* 473; David Weisburd et al, *Displacement of Crime and Diffusion of Crime Control Benefits in Large-Scale Geographic Areas* (Campbell Database of Systematic Reviews, Protocol, 2011); John Eck and Emily Eck, 'Crime Place and Pollution: Expanding Crime Reduction Options through a Regulatory Approach' (2012) 11(2) *Criminology & Public Policy* 281.

⁶³ See, eg, Brendan Walker-Munro, 'Use of Big Data Analytics by Tax Authorities', in Margaret Jackson and Marita Shelly (eds), *Legal Regulations, Implications, and Issues Surrounding Digital Data* (IGI Global, 2020) ch 5.

cyber-systemics does not aim to disrupt the interrelationships in a given environment but rather recognises them, categorises them, understands them, and utilises them to promote compliance with normative, economic or social requirements.

Thus, regulators can achieve a great deal with the adoption of a cyber-systemic approach and the use of systemic governance. By looking to influence civil behaviour by leveraging relationships (of which more below) in a holistic manner and cognisant of the cyber-systemic principles outlined above, a regulator can restructure and rebrand itself to better achieve its statutory objectives while increasing legitimacy and authority in environments characterised by uncertainty.

C The Australian Experience of Systemic Governance

The Australian regulatory environment has, like many other jurisdictions, had difficulty accepting the utility of cyber-systemics and systemic governance approaches to regulatory practice.⁶⁴ Although the Australian Public Service Commission is hardly ignorant of the public-policy failures associated with handling wicked problems,⁶⁵ there exists no current research or policy guidance in respect of regulators seeking to adopt a cyber-systemics approach.⁶⁶ Although a complete analysis of Australian experiences with cyber-systemic responses and systemic governance would not be possible in an article of this nature, it suffices to observe that both the scholarly and legislative debate around the topic is seriously lacking. Nonetheless, there are at least two case studies that present a glimpse of how cyber-systemics and systemic governance could be used to promote compliance in response to wicked problems.

Whether one is watching it, betting on it or participating in it, professional sport has long been a part of Australia's social and cultural fabric. Much of Australia's cultural identity is supported by its keen participation in sport at the state, national and international level. However, because of, or despite, its level of interest across broad swathes of Australian society, sport is a notoriously difficult field to regulate. Successive reports over the last decade have demonstrated that it remains a haven for drug misuse, corruption and money-

⁶⁴ See, eg, Straw (n 23).

⁶⁵ Australian Public Service Commission, *Tackling Wicked Problems: A Public Policy Perspective* (2007); Australian Public Service Commission, *Building Better Governance* (2007).

⁶⁶ The current guidance has not been reviewed since 2007: Council of Australian Governments, *Best Practice Regulation: A Guide for Ministerial Councils and National Standard Setting Bodies* (Department of Prime Minister and Cabinet, 2007).

laundering (generally via sports betting).⁶⁷ Adding to this significant challenge is the consideration that sport has evolved into a system where an athlete's individual success 'increasingly depend[s] on the performance capacity of the system they represent[...], including all the organizing resources, the means of regulation, and the interest groups which maintain[...] and promote[...] high performance sport at that time'.⁶⁸

Ferkins and van Bottenburg describe how (at least in an ad hoc way) Australia has approached the implementation of cyber-systemic approaches in the regulation of sport. Although those authors do not refer to it by name, they nonetheless describe concepts of steering, accountability and responsibility across organisational boundaries by reference to the management of relationships between statutory bodies, international and national authorities, player associations and unions, and corporate sponsors and sports clubs (from incorporated entities with Boards and shareholders through to grassroots associations).⁶⁹ In analogous work published at the same time, van Bottenburg was at pains to compare the regulation of elite sport in Australia and the Netherlands as a problem of framing, where the Dutch government was extremely slow to recognise the importance of sport as a public good rather than a private pursuit.⁷⁰ Interestingly, the issues of framing pervade even in authoritarian countries such as China and Colombia.⁷¹ Similar examinations of Australia's elite sport program have yielded suggestions that inform the concept that each stakeholder must manage their relationships and exert influence through the webs of connection with others in the environment, as none of the bodies have any law-based powers to enforce compliance (excepting, perhaps,

⁶⁷ Australian Crime Commission, *Organised Crime and Drugs in Sport* (2013); Joint Committee on Gambling Reform, Parliament of Australia, *Inquiry into the Advertising and Promotion of Gambling Services in Sport* (Final Report, 2013); Samantha Bricknell, 'Corruption in Sport' (2015) 490 *Trends & Issues in Criminal Justice* 1.

⁶⁸ Kalevi Heinilä, 'The Totalization Process in International Sport: Toward a Theory of the Totalization of Competition in Top-Level Sport' (1982) 12(3) *Sportwissenschaft* 235, 238.

⁶⁹ Lesley Ferkins and Maarten van Bottenburg, 'The Governance of High Performance Sport', in Popi Sotiriadou and Veerle de Bosscher (eds), *Managing High Performance Sport* (Routledge, 2013) ch 7.

⁷⁰ Maarten van Bottenburg, 'Passion Alone is No Longer Enough: The Reframing of Elite Sport from a Private Trouble to a Public Issue', in Peter Leisink et al (eds), *Managing Social Issues* (Edward Elgar, 2013) ch 8.

⁷¹ Laura Villareal, *Exploring a Sustainable Autonomy of Sport Organizations: A Study of Relationship between Government and Elite Sport Organizations in Colombia* (PhD Thesis, Seoul National University, 2015); Jinming Zheng et al, 'Interorganisational Conflict between National and Provincial Sport Organisations within China's Elite Sport System: Perspectives from National Organisations' (2019) 22(5) *Sport Management Review* 667.

statutory bodies or those empowered under international law such as the International Olympic Committee).⁷²

Australia's government regulators have not escaped from this process unscathed. Consistent examination of the conduct of sporting events in Australia identified the disparate and fractured regulatory environment that has encouraged uncertainty and illegality.⁷³ The Australian response was to establish Sports Integrity Australia ('SIA') by subsuming the Australian Sports Anti-Doping Authority, the National Integrity in Sport Unit in the Department of Health, and certain integrity functions from Sports Australia.⁷⁴ In his second reading speech, Darren Chester opined that the creation of the SIA was fundamental because

[s]ports integrity matters are now beyond the control of any single stakeholder. They are complex, globalised and connected, forming a complicated threat matrix exposing vulnerabilities that require a robust and nationally coordinated response across sports, governments, regulators, the wagering industry, law enforcement and other stakeholders ...

... Sport Integrity Australia will improve the coordination of Australia's sports integrity response and reduce the regulatory burden on sport, athletes and others who are currently required to interact with multiple agencies across the spectrum of sports integrity issues.⁷⁵

Time will of course tell as to whether the SIA will be more successful than its predecessors.

As a further example, Australia also has a difficult time managing its natural resource environment. Conflicting state and national legal frameworks, together with substantially different concentrations of primary industries across its substantial landscape, result in a patchwork of mismatched regulatory requirements that continue to consider natural resources in the form of 'hydrological or biophysical entities, later ecological but until the present never as structurally coupled social-biophysical systems'.⁷⁶ Although not expressed at

⁷² Lisa Gowthorp, Kristine Toohey and James Skinner, 'Government Involvement in High Performance Sport: an Australian National Sporting Organisation Perspective' (2017) 9(1) *International Journal of Sport Policy and Politics* 153; Steffie Lucidarme, Kathy Babiak and Annick Willem, 'Governmental Power in Elite Sport Networks: A Resource-Dependency Perspective' (2018) 18(3) *European Sport Management Quarterly* 348.

⁷³ Australian Crime Commission (n 67); Joint Committee on Gambling Reform (n 67). See also James Wood, David Howman and Ray Murrphy, *Report of the Review of Australia's Sporting Integrity Arrangements* (Final Report, 2018) 53–68.

⁷⁴ *Australian Sports Anti-Doping Authority Amendment (Sport Integrity Australia) Act 2020* (Cth).

⁷⁵ Commonwealth, *Parliamentary Debates*, House of Representatives, 17 October 2019, 4497 (Darren Chester, Minister for Veterans and Defence Personnel).

⁷⁶ Ison and Schlindwein (n 49) 897.

a political or policy level, the learnings of cyber-systemics in water management have been successfully studied in Australia. By embracing the use of cyber-systemics to inform a systemic governance framework, the relationships have been more appropriately and sustainably managed between local landowners, water users and licence holders, and resource regulators.⁷⁷ Godden and Ison, in particular, describe the concepts of framing and legitimacy (again, similar to issues identified above in relation to criminal law regulators) as forming substantive barriers to the proper formation of solutions in governing access to, and usage of, Australia's water resources. They also identify a substantial number of actors in the regulatory environment, including the media, industry participants and landowners, as well as governmental and non-governmental research and policy bodies. They argue for the adoption of not just consolidated legislative reform, but also the inclusion of widened community forums, devolution of decision-making power, and the use of market power to encourage and enforce compliance with both social and financial norms. In doing so, Godden and Ison suggest that cyber-systemic approaches decrease uncertainty, improve regulatory legitimacy and enhance community involvement.⁷⁸

Collectively, these examples suggest that regulators who adopt a cyber-systemic approach in their statutory objectives, or reconstruct themselves in such a manner as to utilise systemic governance, are better placed to regulate the environments within which those regulators are embedded. An attempt will now be made to show how these various relationships may be leveraged by regulators of the criminal law to enact behaviour change towards compliance.

IV SYSTEMIC GOVERNANCE IN CRIMINAL LAW

The concepts and principles of cyber-systemics as articulated in the form of systemic governance are worth exploring from the perspective of responses to crime and criminal offending. This is especially the case for criminal offending associated with the disruption engendered by new technologies and practices, as the nature of the disruption often forces criminal law regulators to scramble for influence and legitimacy in the face of new or modified challenges to their authority. Cyber-systemics enacted in the form of systemic governance is attractive to criminal law regulators for the following reasons:

⁷⁷ Ray Ison and Philip Wallis, 'Mechanisms for Inclusive Governance', in Eiman Karar (ed), *Freshwater Governance for the 21st Century* (SpringerOpen, 2017) ch 9; Lee Godden and Ray Ison, 'Community Participation: Exploring Legitimacy in Socio-Ecological Systems for Environmental Water Governance' (2019) 23(1) *Australasian Journal of Water Resources* 45.

⁷⁸ Ison and Wallis (n 77) 47–9.

1. Cyber-systemics evolved in response to the widely acknowledged regulatory deficits observed in the literature,⁷⁹ which deficits are defined by ‘relatively widespread inadequacies in perception and management of governance risks at the organisational level, coupled with insufficiently comprehensive and/or effective regulative and market-based mechanisms within society’⁸⁰ — results similar to the regulatory disconnection suffered by regulators as a result of technological shift.⁸¹
2. At its core, systemic governance involves the multi-jurisdictional collation of effort by multiple public actors in the protection of established rights and utilises the influence of relationships to achieve compliance in protection of those rights⁸² — which protection remains one of the fundamental requirements of the penal law and one of its central tenets in the eyes of the public.
3. The concepts of cyber-systemics and systemic governance are not inconsistent with (and indeed can wholly incorporate) responsible use of law-enforcement strategies such as profiling, data-mining and algorithmic analysis.⁸³ Because cyber-systemics focuses on the maintenance and protection of relationships within a democratic, free and human-rights-based society, it can in fact support the protection of

⁷⁹ Peter Haas, ‘Addressing the Global Governance Deficit’ (2004) 4(4) *Global Environmental Politics* 1; Kenneth W Abbott and Duncan Snidal, ‘Strengthening International Regulation through Transmittal New Governance: Overcoming the Orchestration Deficit’ (2009) 42(2) *Vanderbilt Journal of Transnational Law* 501; Yaqing Qin, ‘Power Shift, Governance Deficit and a Sustainable Global Order’ (2013) 1(1) *Economic and Political Studies* 89; Victor Bekkers, Geske Dijkstra and Menno Fenger, *Governance and the Democratic Deficit: Assessing the Democratic Legitimacy of Governance Practices* (Routledge, 2016); Agus Pramusinto, Eko Prasajo and Wahyu Sutiyono, ‘In Conclusion — Bridging the Governance Deficit’ (2018) 39(6) *Policy Studies* 638.

⁸⁰ Naila Podrug, Davor Filipović and Lara Jelenc, ‘Theoretical Exploration of Selected Corporate Governance Challenges’ (Proceedings of the GAI International Academic Conference, New York, 22–5 May 2016) 50.

⁸¹ Roger Brownsword, *Law, Technology and Society: Reimagining the Regulatory Environment* (Routledge, 2019).

⁸² Nuria Cunill Grau, Maria Fernández and Marcos Vergara, ‘Systemic Governance for a Human Rights Approach to Health: An Analysis Based on the Chilean Case’ (2011) 7(1) *Salud Colectiva* 21.

⁸³ See, eg, Margot E Kaminski, ‘Binary Governance: Lessons from the GDPR’s Approach to Algorithmic Accountability’ (2018) 92(6) *Southern California Law Review* 1529; Mirko Bagaric and Dan Hunter, ‘Introducing Disruptive Technology to Criminal Sanctions: Punishment by Computer Monitoring to Enhance Sentencing Fairness and Efficiency’ (2019) 84(4) *Brooklyn Law Review* 1227.

civil rights in the adoption of technology-based law-enforcement solutions.⁸⁴

4. The maintenance of relationships through systemic governance is supported by a substantial body of literature emphasising the importance of cooperation, and appropriate coordination among several government sectors, which are key resourcing constraints on public regulators combatting wicked problems.⁸⁵

The consideration of cyber-systemics and systemic governance in the scope of the criminal law provokes the question of just how a regulator should seek to build, maintain and protect the relationships and webs of influence to which a cyber-systemic framework speaks. Some of these methodologies have been examined in other works (albeit from different perspectives),⁸⁶ but they are considered to be of relevance here to the implementation of a systemic governance framework to regulate the conduct of disruptive criminal offending. In those other works, four regulatory methodologies — hierarchy, competition, community and design — were examined. These were modelled broadly on the concepts set out by Murray and Scott,⁸⁷ which concepts are embedded within a broader matrix involving ongoing monitoring of the regulated population. Each regulatory methodology is cyber-systemic in nature in that it leverages on the development and maintenance of a particular relationship or class of relationships, with surveillance or monitoring permitting the regulator to understand how influence is created and transferred within the web of relationships.⁸⁸ The methodologies also represent regulatory opportunities to enact a cybernetic principle known as requisite variety, where ‘single-use methodologies are doomed to failure, and the deployment of the widest possible set of regulatory responses against a disruptor ... is crucial’.⁸⁹ It is worth

⁸⁴ Jens K Roehrich and Michael A Lewis, ‘Procuring Complex Performance: Implications for Exchange Governance Complexity’ (2014) 34(2) *International Journal of Operations and Production Management* 221; Cunill Grau et al (n 82) 30–1; Kaminski (n 83) 1611–13.

⁸⁵ Cunill Grau et al (n 82) 23.

⁸⁶ Brendan Walker-Munro, ‘Regulating Disruption and Development of the Disruption Calculus’ (2019) 46(1) *University of Adelaide Law Review* 111; Brendan Walker-Munro, ‘A Shot in the Dark: Australia’s Proposed Encryption Laws and the Disruption Calculus’ (2019) 40(3) *University of Western Australia Law Review* 783 (‘A Shot in the Dark’); Walker-Munro, ‘Systemic Design in Criminal Law Techno-Regulation’ (n 27).

⁸⁷ Andrew Murray and Colin Scott, ‘Controlling the New Media: Hybrid Responses to New Forms of Power’ (2002) 65(4) *Modern Law Review* 491.

⁸⁸ Sergio Barile et al, ‘People, Technology and Governance for Sustainability: The Contribution of Systems and Cyber-Systemic Thinking’ (2018) 13(5) *Sustainability Science* 1199.

⁸⁹ Walker-Munro, ‘A Shot in the Dark’ (n 86) 804.

examining each of these methodologies through the lens of cyber-systemics, to determine how systemic governance might apply in a criminal law environment.

The etymology of hierarchy as a regulatory methodology acknowledges that the tools of the substantive law (ie statutes, ordinances and regulations enacted by the legislature, and the behavioural control enacted by pecuniary and penal sanctions) do not and cannot address all of the possible permutations of wicked problems, especially those involving disruptive technologies or practices. There is a substantial body of literature already discussed above outlining this 'governance deficiency', but cyberneticists likewise recognise that hierarchical law-focused structures alone are ill-suited to modern regulatory responses.⁹⁰ A specific example is presented by McIntyre-Mills, who describes the challenges of youth crime control in the Northern Territory, and the failures of single lines of hierarchical control to address that problem.⁹¹ Under a systemic governance framework (endorsed in recent literature on climate change⁹²), the purpose of the hierarchy methodology is to use legal and quasi-legal instruments to shape and limit the scope and manner of how relationships may be formed, both within the regulated environment and also as between regulator and regulatee. These relationships may be transitory, mutative or time-dependent depending on the circumstances and foci of each of the parties, but they should certainly be embedded with incentives, either positive or negative, that promote compliant behaviour in the formation and maintenance of such relationships. Criminal law regulators can therefore consider incorporating hierarchical crime controls that challenge, filter, funnel and allow or block relationships between parties by coding economic costs to non-compliance. Influence can then be exerted by any regulator (ie not just the one that enacted the hierarchical control) within the web of interdependence in which the relationship is constructed.⁹³

Under the competitive methodology, the cyber-systemic approach seeks to foster relationships between parties who are subject to a regulator's jurisdiction or control, with a view to providing market-based incentives that foster

⁹⁰ Ray Ison, *Systems Practice: How to Act in Situations of Uncertainty and Complexity in a Climate-Change World* (Springer, 2nd ed, 2017). See also Gerard Fairtlough, *The Three Ways of Getting Things Done: Hierarchy, Heterarchy and Responsible Autonomy in Organizations* (Triarchy Press, 2007); Jason Alexandra, 'Australia's Landscapes in a Changing Climate — Caution, Hope, Inspiration, and Transformation' (2012) 63(3) *Crop and Pasture Science* 215.

⁹¹ Janet McIntyre-Mills, *Systemic Governance and Accountability: Working and Re-Working the Conceptual and Spatial Boundaries* (Springer, 2007) vol 3, 188–95.

⁹² Ison (n 90); Alexandra (n 90); Le Thi Hong Phuong, G Robbert Biesbroek and Arjen EJ Wals, 'Barriers and Enablers to Climate Change Adaptation in Hierarchical Governance Systems: The Case of Vietnam' (2018) 20(4) *Journal of Environmental Policy & Planning* 518.

⁹³ Fred Phillips, 'Inter-Institutional Relationships and Emergency Management' (2011) 3(1–2) *International Journal of Society Systems Science* 49; Petri Virtanen and Jari Stenvall, 'Systemic Governance Challenges and Well-Being', in Petri Virtanen and Jari Stenvall (eds), *Intelligent Health Policy* (Springer, 2018) ch 2; Ray Ison and Ed Straw, *The Hidden Power of Systems Thinking: Governance in a Climate Emergency* (Routledge, 2020) ch 10.

compliant behaviour. This can take the form of creating markets or sub-markets to solve regulatory challenges, providing licences or permits to engage in otherwise illegitimate behaviour, fostering 'certification' as a mechanism for promoting brand awareness or social endorsement, or encouraging members of a market to contribute to the surveillance or monitoring of the market.

The Australian Federal Police ('AFP') engaged in one such cyber-systemic competitive approach on 11 October 2019, when it performed the first crowdsourced intelligence operation, the National Missing Persons Hackathon. This Hackathon, a joint venture between the AFP and not-for-profit organisation Trace Labs, encouraged competitors from a number of locations around Australia to participate in a six-hour challenge. Using only open-source intelligence (ie intelligence freely available from the Internet and darkweb, and obtained only using lawful means), competitors competed to track down the whereabouts of 12 missing persons supplied by the National Missing Persons Coordination Centre. Points were awarded for each piece of intelligence submitted and successfully 'validated' by the AFP, with the top three entrants receiving a prize. By the end of the Hackathon, the 354 participants had identified nearly 4,000 new leads across the 12 cases.⁹⁴

Water regulation in the United Kingdom⁹⁵ and the regulation of high-performance sport⁹⁶ have also demonstrated substantial benefits from competition-focused approaches. Competition can be an incredibly powerful compliance mechanism, particularly in commercial environments, where the incentives offered are directly linked to both general and specific behaviours in observable populations. Similar to hierarchy, and reinforcing the concept of requisite variety, competition should not be used in isolation from other forms of cyber-systemic control.⁹⁷

The regulatory methodology of community has significant drivers when utilised as a tool of cyber-systemic control, because it seeks to strengthen and leverage relationships within the community to aid the regulator in its modification of behaviour. These relationships not only boost the capability of the regulator to perform surveillance and monitoring (generally by increasing tip-offs or dob-ins by members of the regulated community for non-compliant

⁹⁴ Australian Federal Police, 'Australia's First Large Scale Hackathon Combines Innovative Approach with Crowdsourced Talent to Find National Missing Persons' (Media Release, 11 October 2019); AustCyber, 'Adelaide Team Wins Australia's First Hackathon to Find National Missing Persons' (Media Release, 18 October 2019).

⁹⁵ Natalie Foster et al, 'Water Governance in England: Improving Understandings and Practices through Systemic Co-Inquiry' (2016) 8(11) *Water* 540.

⁹⁶ Ferkins and van Bottenburg (n 69).

⁹⁷ Naila Podrug and Domagoj Račić, 'Corporate Governance as a Learning Process: Organisational and Societal Levels' (2011) 8(1) *Megatrend Review* 95.

behaviour), but also perform an important normative role for compliant behaviour. As was illustrated in Figure 3 in Part III(B) above, relationships between an individual and his or her surrounding community (cultural, religious or familial) have a strong influence on compliance and can exist even in the absence of strict legal controls. Although these relationships are often leveraged in relation to social problems like illicit drugs,⁹⁸ cyber-systemics recognises and elevates them to the status of ‘ecosystems of control’, where participants both influence and can be influenced.⁹⁹ Community controls can also be used in such circumstances to address unethical or unwanted behaviour that may strictly be legal, such as in cases where behaviour may offend the spirit rather than the letter of the law.¹⁰⁰ However, like the other regulatory methodologies, community cannot operate in a vacuum. Although cybernetics scholars encourage regulation by self-organisation or responsible autonomy (where ‘individuals or groups make decisions yet are accountable for their outcomes’¹⁰¹), it is suggested that engaging in community-based controls, particularly those involving self-regulation, without other methodologies is inappropriate. The discussion of ASIC’s shortcomings exposed by the Royal Commission in the introduction to this article ought to be persuasive enough on this point.

The final methodology discussed in this article is that of design. Design encompasses the use of controls that foreclose the behavioural cause of non-compliance by preventing its occurrence; in essence, an offence cannot occur because the preconditions for the offence never arise. Sparrow describes the earliest attempts at the design methodology by reference to the United States Customs Service, who used chicanes to physically prevent trucks from speeding through drug checkpoints.¹⁰² In a more modern sense, technology plays a key role in the design methodology by putting in place specific controls that coerce or enforce socially desirable relationships¹⁰³ — a mechanism that Kerr described as

⁹⁸ Joshua Newman and Brian W Head, ‘Wicked Tendencies in Policy Problems: Rethinking the Distinction between Social and Technical Problems’ (2017) 36(3) *Policy and Society* 414.

⁹⁹ Barile et al (n 88) 1201.

¹⁰⁰ Sharon Yadin, ‘Regulatory Shaming’ (2019) 49(2) *Environmental Law* 1.

¹⁰¹ Ison, Alexandra and Wallis (n 3) 1219.

¹⁰² Malcolm K Sparrow, *The Character of Harms: Operational Challenges in Control* (Cambridge University Press, 2008) ch 2.

¹⁰³ Benoît Macq, Patrice Rondao Alface and Mireia Montanola, ‘Applicability of Watermarking for Intellectual Property Rights Protection in a 3D Printing Scenario’ (Conference Paper, International Conference on 3D Web Technology, 18–21 June 2015); Roger Brownsword and Alon Harel, ‘Law, Liberty and Technology: Criminal Justice in the Context of Smart Machines’ (2019) 15(2) *International Journal of Law in Context* 107.

the ‘automation of virtue’.¹⁰⁴ Design in a cyber-systemic sense also has the capacity to step beyond the implantation of technological controls and embrace the meta-level of ‘crafting’ entire organisations designed to foster more productive and virtuous relationships in the protection of civil rights.¹⁰⁵

Bringing these four regulatory methodologies together and embedding them in a matrix requiring surveillance or monitoring of the regulated population is the sum of the *systemic governance* framework proposed in this article.¹⁰⁶ Systemic governance is thus a mixture of all four regulatory methodologies against the backdrop of a strong and consistent monitoring or surveillance regime. Again, an adaptive and reactive mixture of all four methodologies is needed to ensure that we meet the principle of requisite variety, and to ensure that criminal law regulators avoid the stagnancy of single-domain approaches (such as a sole reliance on changes in the law to give new powers or create new offences). A robust program of monitoring or surveillance is also required to ensure that criminal law regulators not only identify and target the correct actors in the network, but also observe the environmental reactions to chosen methodologies. This requires that these regulators continue to be agile and responsive to environmental stimuli, much like the sailor navigating a difficult river.¹⁰⁷

As has been said already, systemic governance not only identifies the linkages between the environment, society and the individual, it also seeks to leverage those linkages to achieve a change in behaviour. Now, in terms of applying this framework to the criminal law, it is worth acknowledging the some scholars consider the penal law and regulatory law to be discrete constructs.¹⁰⁸ Specifically, Larkin cautioned against the indiscriminate use of the criminal law in a regulatory sense when he said:

The marriage of the regulatory law and the criminal law poses difficulties not present when either doctrine stands alone ... Just as using any tool for a purpose it was not designed to serve is likely to damage both the tool and the object of its intended use,

¹⁰⁴ Ian R Kerr, ‘Digital Locks and the Automation of Virtue’, in Michael Geist (ed), *From ‘Radical Extremism’ to ‘Balanced Copyright’: Canadian Copyright and the Digital Agenda* (Irwin Law, 2010) ch 9.

¹⁰⁵ Christian Bason, *Design for Policy: Design for Social Responsibility* (Gower Press, 2014); Gillian Metzger, ‘The Constitutional Duty to Supervise’ (2014) 124(6) *Yale Law Journal* 1836; Daphna Renan, ‘The Fourth Amendment as Administrative Governance’ (2016) 68(5) *Stanford Law Review* 1039; Ison and Schlindwein (n 49) 897; Bruna de Castro e Silva, ‘Humanizing (Anti) Corruption: The Socio-Legal Values of a Human Rights-Based Approach to Corruption’ (2019) 5 *Kyiv-Mohyla Law and Politics Journal* 59.

¹⁰⁶ Effectively, systemic is defined as governance as ‘governance through cyber-systemics’.

¹⁰⁷ Ison Grant and Bawden (n 50) 626.

¹⁰⁸ Anthony Ogus, ‘Criminal Law and Regulation’, in Gerrit de Geest (ed), *Encyclopedia of Law and Economics* (Edward Elgar, 2nd ed, 2009) vol 3, ch 3.

using the criminal law for regulatory purposes will impose serious costs on both the criminal justice system and the public. At the end of the day, society may deem those costs justifiable in pursuit of a more important goal, but that decision cannot be made without considering precisely how the purposes and uses of the regulatory and criminal law differ, whether those disparate purposes can be reconciled without doing violence to either one, and if that reconciliation can be achieved in a better manner. That decision can only be made after taking into account the specific elements of a particular regulatory program and how the criminal law would be used as an enforcement tool.¹⁰⁹

Yet Larkin's caution is built upon several foundations that systemic governance does not disturb. First, there appears to be little difficulty with systemic governance where the criminal or regulatory laws are used without overlap. Systemic governance does not expand or broaden the use of hierarchical controls such as the scope of criminalisation under the law without support from the other methodologies. Increasing criminalisation with no other form of regulatory methodology simply encourages offenders to rationalise their behaviour.¹¹⁰ Systemic governance, on the other hand, recognises that the criminal law is simply one tool among many that might be employed to encourage compliance, and that it should not be used in isolation. Larkin cautions that the criminal law may 'damage both the tool and the object of its intended use'; however, systemic governance encourages criminal law regulators to look to other mechanisms to promote compliance. This proposition is supported by recent literature in criminology, which as a field has shied away from overreliance on the criminal law to solve social problems, instead considering the wider apparatus of crime through the lens of actuarial risk, security and regulation.¹¹¹

Secondly, by adopting the concept of requisite variety, systemic governance supports Larkin's observation that regulators should always consider whether the disparate purposes of the criminal and regulatory law might be reconciled without damage to either. While there exists a temptation to subject a given social target to both criminal and regulatory law treatments, systemic governance encourages a divergent approach. Using two hierarchical tools (both criminal law

¹⁰⁹ Paul J Larkin Jr, 'Regulation, Prohibition, and Overcriminalization: The Proper and Improper Uses of the Criminal Law' (2014) 42(3) *Hofstra Law Review* 745, 758.

¹¹⁰ Todd Haugh, 'Overcriminalization's New Harm Paradigm' (2015) 68(5) *Vanderbilt Law Review* 1191.

¹¹¹ Jason Snead and John-Michael Seibler, *The FAA Drone Registry: A Two-Month Crash Course in How to Overcriminalize Innovation* (Issue Brief No 4525, The Heritage Foundation, 8 March 2016); Anna Gurinskaya and Mahesh Nalla, 'The Expanding Boundaries of Crime Control: Governing Security through Regulation' (2018) 679(1) *Annals of the American Academy of Political and Social Science* 36; Benjamin Levin, 'Mens Rea Reform and Its Discontents' (2019) 109(3) *Journal of Criminal Law & Criminology* 491; Mark Button, 'The "New" Private Security Industry, the Private Policing of Cyberspace and the Regulatory Questions' (2019) 36(1) *Journal of Contemporary Criminal Justice* 39.

and regulatory law) serves only to *increase* uncertainty rather than resolve it. Consider the following:

1. Is an offender prejudiced in a criminal trial if he/she first answers to civil or administrative proceedings?¹¹² This might occur where the conduct or nature of the alleged offending is also a breach of some civil or disciplinary standard, and the offender is under either a compulsion to defend themselves to the allegations, or wishes to do so voluntarily, to the prejudice of their defence in the criminal proceedings. There may also be circumstances where the higher bar of criminal proceedings results in an acquittal, whereas the lower evidentiary threshold results in a finding of no liability or fault in civil or disciplinary proceedings.
2. How does the criminal law and regulatory law resolve unlawful behaviour involving multiple actors who may not be subject to the jurisdiction of that law (such as the involvement of the foreign crew of the foreign-flag vessel the Ruby Princess in the COVID-19 outbreak)?¹¹³
3. Where a regulator has both criminal and regulatory powers, which takes priority? And to what extent do the expectations of the regulated environment anticipate or influence the use of those powers?¹¹⁴

Thirdly, Larkin was clearly open to the reconciliation of the aims and purposes of the criminal and regulatory law, merely advising that the reconciliation could be achieved in a better manner. This proposition stands well alongside a systemic governance approach, where the regulator's focus is on the creation, maintenance and strengthening of trusted relationships both within a regulated environment and as between regulator and regulated.¹¹⁵ The enhancement of

¹¹² *Commissioner of the Australian Federal Police v Zhao* (2015) 316 ALR 378; cf *Construction, Forestry, Mining and Energy Union v Australian Competition and Consumer Commission* [2016] FCAFC 504; *Psychology Board of Australia v Ildiri* [2011] VCAT 1036. See also Joshua Kulawiec, 'Double Jeopardy in the Regulatory State' (2001) 78 (Autumn) *Australian Law Reform Commission Reform Journal* 60; Scott McLean, 'Evidence in Legal Profession Disciplinary Hearings: Changing the Lawyers' Paradigm' (2009) 28(2) *University of Queensland Law Journal* 225.

¹¹³ Evidence to the Special Commission of Inquiry into the Ruby Princess, Sydney, 21–2 April 2020 (Dr Ilse von Watzdorf).

¹¹⁴ Recalling ASIC's experience in the *Royal Commission 2019 Report* (n 5).

¹¹⁵ Mireille Hildebrandt, 'Criminal Law and Technology in Data-Driven Society', in Markus D Dubber and Tatjana Hornle (eds), *Oxford Handbook of Criminal Law* (Oxford University Press, 2014) ch 9; Geoffrey R Skoll, 'Stealing Consciousness: Using Cybernetics for Controlling Populations' (2014) 4(1) *International Journal of Cyber Warfare and Terrorism* 27; Arianna Visconti, 'A "Narrative" of the Individual-Community Relationship through the "Lenses" of Criminal Law: Three Sketches of Mystification' (2017) 11(2) *Pólemos* 299; Victoria MacGill, 'A Social Cybernetic View of Violence and Some Paradoxes of Working with Violent Abusers' (2018) 12 *Open Cybernetics & Systemics Journal*

trusted relationships also builds regulatory confidence and legitimacy in the system, avoiding the costs to both the system and the public.

V CONCLUSIONS AND FUTURE DIRECTIONS

The systemic governance framework proposed in this article, as well as the principles that underpin it, are derived substantially from the domain of cybernetics and its intersection with regulatory science. This is an area that has lacked substantial and consolidated scholarship but which is beginning to achieve prominence because of the issues associated with overcriminalisation, State-sanctioned intrusions into privacy, and the increasingly disrupted economic and social environment in which we now live. These are wicked problems in and of themselves, and to which there are no easy answers. For example, while earlier work has made clear that surveillance and monitoring is a vital part of a cyber-systemic solution in the application of the criminal law,¹¹⁶ it is recognised that these technologies can also be invasive, prone to abuse, and able to undermine or destroy the very relationships that a cyber-systemic response seeks to foster.¹¹⁷ The subjective and objective impact of surveillance and monitoring on the regulated population and its interpretation of the authority, legitimacy and trust of the regulator is worthy of further examination, not only to inform regulators who intend to adopt a cyber-systemic approach, but also to guard against and protect the valuable civil rights upon which such a program may impinge.

The nature, duration and circumstances of relationship-building lie at the heart of a cyber-systemic approach and the overall implementation of systemic governance. Therefore, it is logical that the actual implementation of such relationships in a practical setting is equally of interest to scholars and regulatory practitioners. Some of the literature has already demonstrated the benefits of an enhanced relationship nature in the form of community or competitive control,¹¹⁸ but further research is needed. When does a regulator encourage competition over community, or hierarchy over design? Although it is possible that a suitably balanced blend of all four regulatory methodologies — offset with an appropriately robust monitoring framework — would be the most ideal regulatory stance to take, such a proposal has not been empirically proven. The balance of regulatory methodologies, and therefore the maintenance and focus of

20; Clarissa Meerts, 'Corporate Investigations: Beyond Notions of Public-Private Relations' (2020) 36(1) *Journal of Contemporary Criminal Justice* 86.

¹¹⁶ Walker-Munro, 'Systemic Design in Criminal Law Techno-Regulation' (n 27) 320. See also Brendan Walker-Munro, 'Disruption, Regulatory Theory and China: What Surveillance and Profiling Can Teach the Modern Regulator' (2019) 8(1) *Journal of Governance and Regulation* 23 ('Disruption, Regulatory Theory and China').

¹¹⁷ Walker-Munro (n 117), 'Disruption, Regulatory Theory and China', 23–6.

¹¹⁸ MacGill (n 116); Meerts (n 116).

resources on the relationships that those methodologies require, may also differ between regulatory contexts. For example, a specific focus of cyber-systemic relationships may be suitable for regulating tax or corporate ‘white collar’ crime, but inappropriate for the pursuit or regulation of sexually based offences or environmental crime. The approach to be taken in each context should be subject to its own scrutiny.

Finally, there is very little (if any) outcomes-based consideration of the methodologies. While theoretical benefits can be easily considered and perhaps quantified (although such is beyond the scope of this article), there exists no examination in the fields of behavioural economics or applied criminology that would support empirical findings. Certainly, these fields warrant greater clarity, not least of which because of the attractiveness to politicians and policymakers of improving compliance by reference to a dollar figure. These so-called compliance dividends, informed by a cyber-systemic approach, would go a long way toward embedding this framework as a contemporary response to disruption.

Overall, the possible benefits of cyber-systemics and systemic governance in the regulation of the criminal law are exciting. They provide an opportunity for criminal law regulators to move away from overcriminalisation of targeted behaviour and towards prompting compliance. They provide numerous avenues for further policy or economic research, with a demonstrable series of potential outcomes. They offer opportunities for a canny regulator to foster trust and improve legitimacy in environments often characterised by uncertainty, and it is this author’s hope that cyber-systemics and systemic governance become a substantial field in the areas of regulatory and policy research in the years to come.