

THE “LETTER” AND THE “SPIRIT” OF COMPARATIVE LAW IN THE TIME OF “ARTIFICIAL INTELLIGENCE” AND OTHER OXYMORA

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Abstract

Comparative law is, paradoxically, both driven by and a driver of constant change. Over time, it has been described as an “enigma”, an “essentially contested concept”, and has repeatedly been pronounced “dead”, but it has never ceased to provide important inspiration for the understanding of the role of law, in terms of legal education, theory and practice. Today, the constructive contribution of comparative law to the future role of law may again be needed, possibly more than ever. The reason for this is that recent decades have shown an unprecedented pace of scientific and technological innovation, which has driven economic globalisation and legal pluralism. Moreover, these technologies have inaugurated an era, called the “Anthropocene”, that seems to put the entire planet and its human inhabitants under the threat of extinction. In this context, various disruptive technologies – debated in terms of so-called “essentially oxymoronic concepts”, like artificial intelligence, big data, the sharing economy or synthetic biology – tend to undermine the present foundation of the law and possibly threaten the future role of the law and the legal profession. Yet, these apparently contradictory concepts also indicate the possibility of a cognitive revolution that may affect legal concepts, education and practice in the future.

I. Introduction

It all began about 70,000 years ago, when the Cognitive Revolution enabled Sapiens to start talking about things that existed only in their own imagination.¹

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1 Yuval Noah Harari *Homo Deus: A Brief History of Tomorrow* (Harper, New York, 2017) at 156.

Comparative law appears to be a constantly evolving concept, or else a rapidly changing field of law.² It seems to change even faster than the law itself. Defying a conclusive definition, both law and comparative law have been discussed as possible essentially contested concepts.³ It seems that the best available definition of law is the one provided in a poem by Wystan H Auden, that “Law is the Law”.⁴ Alternatively, law and comparative law can be seen as “vague” concepts,⁵ which could be taken as a reason for denying any debate about their essential properties.⁶ Worse than not debating it, some have even gone as far as to announce the end or death of comparative law.⁷ Predictions about the future fate of law itself are not much better. Over the past century, the debate about law may too – paradoxically – have shifted from pondering what is and should be the “end of law” (in terms of its function) to announcing the “end of law” (in terms of the death of law).⁸

2 See also Peter de Cruz *Comparative Law in a Changing World* (2nd ed, Cavendish, London, 1999).

3 For law and comparative law being contested, see Esin Örüciü *The Enigma of Comparative Law: Variations on a Theme for the Twenty-first Century* (Springer, Dordrecht, 2004) at 167. For law being an essentially contested concept, see, for example, Leslie Green “The Political Content of Legal Theory” (1987) 17 *Philosophy of the Social Sciences* 1 at 16–20; Andrei Marmor *Law in the Age of Pluralism* (Oxford University Press, Oxford, 2007) at 151 and Andrei Marmor *Philosophy of Law* (Princeton University Press, Princeton, 2011) at 132–134. For comparative law being an essentially contested project, see also Esin Örüciü “Critical Comparative Law: Considering Paradoxes for Legal Systems in Transition” (2000) 4(1) *EJCL* 1 <www.ejcl.org>.

4 See Edward Mendelson (ed) *WH Auden: Selected Poems* (Vintage Books, New York, 1979) at 90.

5 See, for example, Antonina Bakardjieva Engelbrekt and Joakim Nergelius “Introduction” in Antonina Bakardjieva Engelbrekt and Joakim Nergelius (eds) *New Directions in Comparative Law* (Edward Elgar, Cheltenham, 2009) xiii at xxi: “One persisting feature is the openness and vagueness of the very concept of comparative law”.

6 See, for example, Joseph Raz “Can There Be a Theory of Law?” in Martin P Golding and William A Edmundson (eds) *The Blackwell Guide to the Philosophy of Law and Legal Theory* (Blackwell, Malden, 2005) 324 at 341.

7 See, for example, MM Siems “The End of Comparative Law” (2007) 2(2) *Journal of Comparative Law* 133 at 133 (“This article suggests that the early 21st century is seeing the decline, or maybe even the ‘end’, of comparative law.”) and International Society of Public Law (ICON-S), “Mission Statement”; available at: <www.icon-society.org> (“What then of “Comparative Law”? Are we announcing the death of the field? Perhaps not of the field, but of the word. The field is flourishing.”). For additional writings on the end of comparative law, see also M Reimann “The End of Comparative Law as an Autonomous Subject” (1996) 11 *Tul Eur & Civ LF* 49 at 50; and P Zumbansen “Transnational Comparisons: Theory and Practice of Comparative Law as a Critique of Transnational Governance” in M Adams and J Bomhoff (eds) *Practice and Theory in Comparative Law* (Cambridge University Press, Cambridge, 2012) 186 at 187.

8 Compare Roscoe Pound “The End of Law as Developed in Legal Rules and Doctrines” (1914) 27(3) *Harv L Rev* 195; and Rex R Perschbacher and Debra Lyn Bassett “The End of Law” (2004) 84(1) *BUL Rev* 1 at 2: “The loss of substantive law from the public realm distorts the legal landscape, limits public testing and debate of legal norms, and devalues or destroys institutional competencies. Taken together, we refer to these developments as presaging ‘the end of law’”).

With regard to the claims of the death of law, there exists a plethora of likely causal factors that have contributed to the demise of law: privatisation,⁹ overregulation,¹⁰ the proliferation of laws and legal fora,¹¹ (legal and/or cultural) diversity,¹² fragmentation and lack of unity and coherence¹³ are but a few of these. Moreover, these related problems may mutually reinforce each other, and are usually mirrored at the local, regional and global level. Additional new threats to the future of law and lawyers alike are now being identified and are starting to be discussed.¹⁴ These new threats are usually related to rapid progress in technological and scientific innovation, and are framed by fashionable and possibly hyped concepts like those of artificial intelligence,¹⁵ machine or deep learning,¹⁶ big data,¹⁷ blockchains,¹⁸ cloud computing cyberspace,¹⁹ social media,²⁰ virtual reality,²¹ the

9 See, for example, Perschbacher, above n 8, at 59.

10 See, for example, Andreas Heldrich "The Deluge of Norms" (1983) 6(2) BC Intl and Comp L Rev 377.

11 See, for example, Benedict Kingsbury "Foreword: Is the Proliferation of International Courts and Tribunals a systemic Problem?" (1999) 31(4) NYUJ Intl Law & Pol 679.

12 See, generally, Ralph Grillo and others (eds) *Legal Practice and Cultural Diversity* (Ashgate, Farnham, 2009); see also Robert Z Lawrence "Rulemaking Amidst Growing Diversity: A Club-of-Clubs Approach to WTO Reform and New Issue Selection" (2006) 9(4) JIEL 823 at 823; and Simon Deakin, "Legal Diversity and Regulatory Competition: Which Model for Europe?" (2006) 12(4) ELJ 440 at 440.

13 See, for example, Pierre-Marie Dupuy "The Danger of Fragmentation or Unification of the International Legal System and the International Court of Justice" (1999) 31(4) NYUJ Intl Law & Pol 91; see also Thomas Cottier and Panagiotis Delimatsis (eds) *The Prospects of International Trade Regulation: From Fragmentation to Coherence* (Cambridge University Press, Cambridge, 2011).

14 See Richard Susskind *Tomorrow's Lawyers: An Introduction to Your Future* (Oxford University Press, Oxford, 2017).

15 See, for example, Mark McKamey "Legal Technology: Artificial Intelligence and the Future of Law Practice" (2017) 22 Appeal 45; and Kevin D Ashley *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press, Cambridge, 2017).

16 See, for example, Harry Surden "Machine Learning and Law" (2014) 89(1) Wash L Rev 87.

17 See, for example, Caryn Devins and others "The Law and Big Data" (2017) 27(2) Cornell JL & Pub Poly 357.

18 See, for example, Daniel S Wittenburg "Blockchain: Technology Rockin' the Legal Industry" (2018) 43(4) Litigation News 26; and Reggie O'Shields "Smart Contracts: Legal Agreements for the Blockchain" (2017) 21 North Carolina Banking Institute 177 at 185–193.

19 See, for example, Jerry L Archer "Dynamic and Effective Security in a Rapidly Evolving Global Cloud Computing Cyberspace" (2015) 16 Georgetown Journal of International Affairs 168–177; Renee Berry and Matthew Reisman "Policy Challenges of Cross-Border Cloud Computing" (2012) 4(2) Journal of International Commerce & Economics 1 and Vineeth Narayanan "Harnessing the Cloud: International Law Implications of Cloud-Computing" (2012) 12(2) Chicago Journal of International Law 783.

20 See, for example, Vanessa S Browne-Barbour "A Fork in the Road: The Intersection of Virtual Law Practice and Social Media" (2013) 52(2) Washburn LJ 267.

21 See, for example, Mark A Lemley and Eugene Volokh "Law, Virtual Reality, and Augmented Reality" (2018) 166(5) U Pa L Rev 1051.

digital economy,²² algorithms operating in black boxes²³ and synthetic biology,²⁴ to mention but a few.

Consequently, each of these problems alone poses a serious challenge to regulation. However, each of them also appears to be connected to the others by strings invisible to our regulatory sight, and their combination appears to reinforce their overall impact and the intensity of their threats. They thus also pose fundamental threats in various broader areas, such as the digital, circular or creative economy in the form of convergenomics,²⁵ the justice system,²⁶ the rule of law²⁷ and democracy²⁸. To put it concisely, they may be capable of putting life in society, as well as life on the entire planet, in serious danger.

The problem of the complex interconnectedness of all of these concepts was well summarised by Yuval Noah Harari in his book *Homo Deus: A Brief History of Tomorrow* as follows:²⁹

Firstly, nobody knows where the brakes are. While some experts are familiar with developments in one field, such as

22 See, for example, Paul-Jasper Dittrich *Online Platforms and How to Regulate Them: An EU Overview* (Jacques Delors Institute, Policy Paper No 227, 14 June 2018).

23 See, for example, Anjanette H Raymond and Scott J Shackelford “Technology, Ethics, and Access to Justice: Should an Algorithm Be Deciding Your Case” (2014) 35(3) *Mich J Intl Law* 485 and Frank Pasquale *The Black Box Society: The Secret Algorithms That Control Money and Information* (Harvard University Press, Cambridge (Mass), 2015).

24 See, for example, Jordan Paradise and Ethan Fitzpatrick “Synthetic Biology: Does Re-Writing Nature Require Re-Writing Regulation” 117(1) *Penn State Law Review* 53; and Andrew W Torrance “Synthesizing Law for Synthetic Biology” (2010) 11(2) *Minnesota Journal of Law, Science and Technology* 629.

25 See, for example, Rostam J Neuwirth “Global Market Integration and the Creative Economy: The Paradox of Industry Convergence and Regulatory Divergence” (2015) 18(1) *JIEL* 21; see also Sean Thomas “Law, Smart Technology, and Circular economy: All Watched Over by Machines of Loving Grace?” (2018) 10(2) *LIT* 230; and Andrew D Mitchell and Neha Mishra “Data at the Docks: Modernizing International Trade Law for the Digital Economy” (2018) 20(4) *Vanderbilt Journal of Entertainment & Technology Law* 1073.

26 See, for example, Ric Simmons “Big Data and Procedural Justice: Legitimizing Algorithms in the Criminal Justice System” (2018) 15(2) *Ohio State Journal of Criminal Law* 573.

27 See, for example, Dave Rejeski, Lovinia Reynolds, and Sarah Wright “When Software Rules: Rule of Law in the Age of Artificial Intelligence” (February 2018) *Environmental Law Institute*, Washington, 2018 <www.eli.org>.

28 See, for example, Dirk Helbing and others “Will Democracy Survive Big Data and Artificial Intelligence?” in Dirk Helbing (ed) *Towards Digital Enlightenment: Essays on the Dark and Light Sides of the Digital Revolution* (Springer International, Cham (Austria), 2019) 73; Julia Schwanholz, Todd Graham, and Peter-Tobias Stoll (eds) *Managing Democracy in the Digital Age: Internet Regulation, Social Media Use, and Online Civic Engagement* (Springer International Publishing, Cham (Austria), 2018); and Cass R Sunstein *#Republic: Divided Democracy in the Age of Social Media* (Princeton University Press, Princeton, 2017).

29 Harari, above n 1, at 51.

artificial intelligence, nanotechnology, big data or genetics, no one is an expert on everything. No one is therefore capable of connecting all the dots and seeing the full picture. Different fields influence one another in such intricate ways that even the best minds cannot fathom how breakthroughs in artificial intelligence might impact nanotechnology, or vice versa. Nobody can absorb all the latest scientific discoveries, nobody can predict how the global economy will look in ten years, and nobody has a clue where we are heading in such a rush. Since no one understands the system any more, no one can stop it.

This paragraph, like the whole book, summarises many of the challenges posed by the new and complex technologies that characterise our time in general. Indirectly, it also highlights the problems confronted in the planned regulation of each of these fields alone, as well as the adequacy, efficiency and legitimacy of the legal system as a whole, in terms of the objectives of the rule of law in providing legal certainty and predictability. One of the principal problems in this context is that each of the fields separately may show developments that are predictable, stable or beneficial, but it is in their mutual combination that their outcome may be reversed and everything turns out to be unpredictable, unstable and harmful.³⁰

We should also note that the doubly oxymoronic title of Harari's book, with its conjunctions of man (*homo*) and God (*deus*) as well as "history" and "future", which thus merges two earlier publications,³¹ invites the question of whether it is mere coincidence that so many of these novel concepts that are debated vividly today around the world have been explicitly or implicitly designated as oxymora or by way of paradoxes. For instance, the concepts of "artificial intelligence (AI)", "big (raw) data", blockchains, "cloud computing cyberspace", "social media", the "creative industries" establishing the creative economy, the "sharing economy", "virtual reality", "heuristic algorithms" operating in "black boxes", or "synthetic biology" have all – as will be shown below – been classified as oxymora and/or identified with related paradoxes.

In this respect it is noteworthy that, in the past, the use of oxymora and paradoxes was primarily reserved for mysticism, the arts and literature: for instance, Oscar

30 This is also known as the "Simpson paradox" derived from statistics; see, for example, Galit Shmueli and Inbal Yahav "The Forest or the Trees? Tackling Simpson's Paradox with Classification Trees" (2018) 27(4) *Production and Operations Management* 696.

31 See Jacques Attali *A Brief History of the Future: A Brave and Controversial Look at the Twenty-First Century* (Arcade, New York, 2009) and Theophilus Parsons *Deus Homo: God-Man* (James Speirs, London, 1871).

Wilde wrote that “the way of paradoxes is the way of truth”.³² Today, however, this trend appears to have broadened in scope, as investigated in a book entitled *Law in the Time of Oxymora: A Synaesthesia of Language, Logic and Law*, which found their use to be increasing in the sciences in general as well as the law in particular.³³

Against the backdrop of this increase in oxymora and paradoxes, this article examines, in Section II, the linguistic concepts used to discuss various novel and so-called “disruptive technologies”, from AI and big data to synthetic biology and virtual reality. These concepts are not only intrinsically linked by their underlying technologies but also share a tendency to be described by oxymora or to be framed in non-binary terms. In Section III, the article ponders on the need to expand the current cognitive framework of dualistic thinking and binary logic by a “new logic”, which is multivalent or more flexible, as a better way to address the regulatory challenges introduced by these disruptive technologies. Based on the discussion, Section IV then discusses various future applications of comparative law, notably by expanding the regulatory field from external or physical to internal or cognitive matters. It advocates a more holistic or oxymoronic approach, one which complements binary with non-binary modes of reasoning and transcends the dichotomy of “the letter versus the spirit” of the law. Finally, the conclusion summarises the various findings, and predicts, 70,000 years of human history having gone by, the imminent advent of a new cognitive revolution.

II. Disruptive Technologies as Essentially Oxymoronic Concepts: Changes in Language and Technology as Indicators of a Cognitive Revolution?

The expression “pure law” is an oxymoron since the law always needs a context within which it is to be considered.³⁴

In order to assess the present challenges to the law and to find a new role for comparative law in the governance of global affairs in the future, it is useful briefly

32 See, for example, Alois M Haas *Sermo mysticus: Studien zu Theologie und Sprache der deutschen Mystik* (Universitätsverlag, Freiburg, 1989) at 27–28; and Javier Herrero Ruiza “Paradox and Oxymoron Revisited” (2015) 173 *Procedia – Social and Behavioral Sciences* 199; and Oscar Wilde *The Picture of Dorian Gray* (Penguin Books, London, 2000) at 30.

33 Rostam J Neuwirth *Law in the Time of Oxymora: A Synaesthesia of Language, Logic and Law* (Routledge, London, 2018).

34 Ontario Superior Court of Justice, *Silveira v. Ontario (Minister of Transportation)*, [2011] O.J. No. 3157 at 22.

to go back in time, as the present trends cannot be properly understood without a short historical excursion. However, history is long and yet time seems short. Therefore, a few examples are selected that indicate the possible advent of and need for a cognitive revolution. To begin with, crucial remarks on laying the foundations for the present developments were made in the 1990s. First, James N Rosenau anticipated the prospect that global governance in the decades ahead would be able to "discern powerful tensions, *profound contradictions*, and *perplexing paradoxes*".³⁵ In the same year, Charles Handy proclaimed the advent of the *Age of Paradox* and, in particular, the need "to find ways to make sense of the paradoxes, to use them to shape a better destiny".³⁶

These two predictive statements seem to have become confirmed by the great number of novel concepts coined, new technologies developed, and new debates initiated since then. Paradoxes are now being coined on a daily basis, and they are often condensed into an "oxymoron", which has been defined as a "paradox compressed into a single self-contradicting phrase" and, thus, called the "show-off among figures of speech".³⁷ What is striking about the rise in paradoxes and oxymora is that – in addition to their frequent use in mysticism and art – they have also now pervaded and started to dominate scientific discourses, including legal scholarship and legal practice, as is shown in the book *Law in the Time of Oxymora: A Synaesthesia of Language, Logic and Law*, which was published in 2018.³⁸

One of the strong indicators of the need for and likelihood of a change in cognition is that, overall, the way in which problems are framed linguistically has shifted from a so-called "culture of contestation" to one of "contradiction", or from the use of "essentially contested concepts"³⁹ to the use of "essentially oxymoronic concepts".⁴⁰ This shift means that many concepts of public interest, like development,⁴¹ power⁴²

35 James N Rosenau "Governance in the 21st Century" (1995) 1(1) *Global Governance* 13 at 13 (emphasis added).

36 Charles Handy *The Age of Paradox* (Harvard Business School Press, Boston, 1995) at xi.

37 See Helen Vendler *The Music of What Happens: Poems, Poets, Critics* (Harvard University Press, Cambridge (Mass), 1988) at 242.

38 Neuwirth, above n 33.

39 See Walter B Gallie "Essentially Contested Concepts" (1956) 56 *Proceedings of the Aristotelian Society* 167.

40 See Rostam J Neuwirth "Essentially Oxymoronic Concepts" (2013) 2(2) *Global Journal of Comparative Law* 147; and see also Neuwirth, above n 33, at 6–24.

41 See, for example, Björn Hettne *Thinking about Development: Development Matters* (Zed Books, London, 2009) at 1: "Development is a contested concept, which implies that it has meant different things from one historical situation to another and from one actor to another".

42 See, for example, Steven Lukes *Power: A Radical View* (2nd ed, Palgrave Macmillan, Basingstoke, 2005) at 30: "Moreover, the concept of power is, in consequence, what has been called an 'essentially contested concept' – one of those concepts which 'inevitably involve endless disputes about their proper uses on the part of their users' [Gallie 1955–6: 169]", see Gallie, above n 39 at 169.

and democracy,⁴³ the meaning of which was formerly contested, are now being discussed in the form of oxymora like “sustainable development”⁴⁴ or paradoxes like those of “democracy”⁴⁵ or of “power and weakness”⁴⁶.

Critics of the relevance of this shift in figures of speech may argue that this is merely a theoretical, linguistic or intellectual view that does not have any impact in practice.⁴⁷ However, it seems that they not only underestimate the weight of evidence in an age of “fake news” and “alternative facts”, to use two more oxymora,⁴⁸ but they also disregard the important role of language (and semantics) as a bridge connecting the world of thoughts with the world of deeds and facts.⁴⁹ Technology is similar in this respect and also connects thoughts to reality by means of the creative imagining of things and the finding of ways to put ideas into practice.⁵⁰

Technology and language thus mutually reinforce the trend of a rise in the number of oxymora and paradoxes. Even the generic concept of “disruptive technologies”, meaning the failure of businesses or industries to adapt to and survive technological change, was framed – somewhat oxymoronically – as both

43 See, for example, Howard A Doughty “Democracy as an Essentially Contested Concept” (2014) 19(1) *The Innovation Journal* 1.

44 See, for example, Wolfgang Sachs “Sustainable Development and the Crisis of Nature: On the Political Anatomy of an Oxymoron” in Frank Fischer and Maarten A Hajer (eds) *Living with Nature: Environmental Politics as Cultural Discourse* (Oxford University Press, Oxford, 1999) 21 at 38.

45 See, for example, Chantal Mouffe *The Democratic Paradox* (Verso, London, 2000).

46 See, for example, George Kunz *The Paradox of Power and Weakness: Levinas and an Alternative Paradigm for Psychology* (State University of New York Press, Albany, 1998) at 13.

47 See also George Lakoff and Mark Johnson “Conceptual Metaphor in Everyday Language” (1980) 77(8) *The Journal of Philosophy* 453 at 453–4: “Moreover, metaphor is typically viewed as characteristic of language alone, a matter of words rather than thought or action”.

48 See Cheryl Ireton and Julie Posetti *Journalism, Fake News & Disinformation: Handbook for Journalism Education and Training* (UNESCO, Paris, 2018) at 7: “This is because ‘news’ means verifiable information in the public interest, and information that does not meet these standards does not deserve the label of news. In this sense then, ‘fake news’ is an oxymoron which lends itself to undermining the credibility of information which does indeed meet the threshold of verifiability and public interest – i.e. real news”; and Jan Blommaert “Ergo: Exploring the World of Alternative Facts” (19 September 2018) [Ctrl+Alt+Dem <alternative-democracy-research.org>](http://Ctrl+Alt+Dem.com/alternative-democracy-research.org/): “For many, the very term “alternative facts” is an oxymoron, since facts are *absolute*”.

49 See also Steven Pinker *The Stuff of Thought: Language as a Window into Human Nature* (Penguin, New York, 2007) at 3: “Semantics is about the relation of words to reality”.

50 See, for example, Douwe Draaisma *Metaphors of Memory: A History of Ideas about the Mind* (Cambridge University Press, Cambridge, 2000) at 3: “From Plato’s wax tablet to the computers of our age memory-related language is shot through with metaphors”; and see also Norm Friesen “Mind and Machine: Ethical and Epistemological Implications for Research” (2010) 25(1) *Artificial Intelligence and Society* 83 at 83.

a dilemma⁵¹ and a tautology (that is, the antonym of an oxymoron).⁵² Disruptive technology can also be understood as an oxymoron if related to the prior work of Joseph A Schumpeter, who used the equally oxymoronic term "creative destruction" to describe the process of competition by which some firms "would perish so that new ones could emerge in the pursuit of the goal of perfect competition."⁵³ Even the attempts to regulate and plan for emerging or new technologies have been framed as an oxymoron, because uncertainty and complexity are said to "undermine traditional planning approaches".⁵⁴

As the paradox is the sister figure of speech of the oxymoron, it is no surprise that the same regulatory problems of new technologies have also been framed as a paradox. Actually, it is a paradoxical law, known as "*Amara's Law*" after the futurist Roy Amara, which states that "[W]e tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run".⁵⁵ The effect of this paradoxical law is also reflected in various hype cycles of new technologies, which include the successive stages of "the peak, disappointment, and recovery of expectations".⁵⁶

The same linguistic trend is also visible at the micro-level of specific novel technologies. For example, the technology described as "artificial intelligence (AI)", a technology on everyone's lips today and threatening to replace lawyers,⁵⁷ has been described as follows:⁵⁸

Perhaps a more serious difficulty with the concept of
artificial intelligence is an apparent contradiction in the very

51 See Clayton M Christensen *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (Harvard Business School Press, Boston, 1997).

52 See, for example, Ashish Sood and Gerard J Tellis "Demystifying Disruption: A New Model for Understanding and Predicting Disruptive Technologies" (2011) 30(2) *Marketing Science* 339L: "First, researchers claim that the central thesis about a disruptive technology causing disruption appears to be tautological".

53 See Joseph A Schumpeter *Capitalism, Socialism and Democracy* (Harper, New York, 1942) at 90.

54 See, for example, Paul JJ Schoemaker and V Michael Mavaddagt "Scenario Planning for Disruptive Technologies" in George S Day, Paul JH Schoemaker and Robert E Gunter (eds) *Wharton on Managing Emerging Technologies* (John Wiley & Sons, Hoboken, 2000) 206 at 206: "Planning for emerging technologies may seem like an oxymoron".

55 Cited in Thomas H Davenport *The AI Advantage: How to Put the Artificial Intelligence Revolution to Work* (The MIT Press, Cambridge (Mass), 2018) at 7.

56 See, for example, Ozgur Dedehayir and Martin Steinert "The Hype Cycle Model: A Review and Future Directions" (2016) 108 *Technological Forecasting & Social Change* 28 at 28.

57 See, for example, Gary E Marchant "Artificial Intelligence and the Future of Legal Practice" (2017) 14(1) *The SciTech Lawyer* 20.

58 Ronald Chrisley "General Introduction: The Concept of Artificial Intelligence" in R Chrisley and S Begeer (eds) *Artificial Intelligence: Critical Concepts* Volume 1 (Routledge, New York, 2000) 1 at 3 (emphasis added).

notion. On this view, “artificial intelligence” is an *oxymoron*, since intelligence implies, and artefactuality is inconsistent with, autonomy.

From a different perspective, a similar classification was formulated as follows:⁵⁹

From the perspective of psychology of intelligence the term artificial intelligence is an *oxymoron*. Intelligence, by nature, cannot be artificial and its inestimable complexity defies any notion of artificiality.

Given the close connection between oxymora and paradoxes, it comes as no surprise that artificial intelligence has also been critically evaluated by means of paradoxes, as manifest in the productivity paradox described as follows:⁶⁰

We live in an age of paradox. Systems using artificial intelligence match or surpass human level performance in more and more domains, leveraging rapid advances in other technologies and driving soaring stock prices. Yet measured productivity growth has declined by half over the past decade, and real income has stagnated since the late 1990s for a majority of Americans.

Often invoked in the same breath as AI, the term “big data”, at least in the form of “(big) raw data” has equally been described as an oxymoron and a bad idea, as follows:⁶¹

We need to open a discourse—where there is no effective discourse now—about the varying temporalities, spatialities and materialities that we might represent in our databases, with a view to designing for maximum flexibility and allowing as much as possible for an emergent polyphony and

59 See Jennifer Gidley *The Future: A Very Short Introduction* (Oxford University Press, Oxford, 2017) at 99 (emphasis added).

60 See Erik Brynjolfsson, Daniel Rock and Chad Syverson “Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics” NBER Working Paper 24001 (November 2017) <www.nber.org>.

61 See Geoffrey C Bowker *Memory Practices in the Sciences* (The MIT Press, Cambridge (Mass), 2006) at 184 (emphasis added); see also Lisa Gitelman and Virginia Jackson “Introduction” in Lisa Gitelman (ed), *“Raw Data” is an Oxymoron* (MIT Press, Cambridge (Mass), 2013) 1 at 2–3.

polychrony. Raw data is both an *oxymoron* and a bad idea; to the contrary, data should be cooked with care.

Closely related to big data is the emergence of "cloud computing" and cyberspace, both of which have given rise to paradoxes and oxymora. While cyberspace was oxymoronically termed as a "placeless place",⁶² "cloud computing" has been associated with the Jevons Paradox,⁶³ which – applied to the cloud – was formulated in the following paragraph:⁶⁴

Although the energy costs of IT services may fall with cloud computing, the overall usage and energy consumption of networked IT is likely to increase and that increase leads to a greater net demand for services.

Cutting a long story short, more examples can be found in the context of other widely debated novel or emerging technologies, such as "machine or deep learning",⁶⁵

62 See Pierre Levy "Collective Intelligence, a Civilisation: Towards a Method of Positive Interpretation" (2005) 18(3/4) *International Journal of Politics, Culture, and Society* 189 at 197: "Cyberspace has become the *placeless place* where humanity's unceasing dialogue with itself can grow and expand" (emphasis added).

63 On the Jevons Paradox, see originally William Stanley Jevons *The Coal Question: An Enquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal Mines*, (2nd ed MacMillan, London, 1866) at 124: "It is the very economy of its use which leads to its extensive consumption".

64 Peter M Corcoran "Cloud Computing and Consumer Electronics: A Perfect Match or a Hidden Storm?" (2012) 1(2) *IEEE Consumer Electronics Magazine* 14 at 18.

65 See, for example, Ralph Windsor "The Digital Asset Transaction Management System – A Time Machine For Digital Assets" (9 March 2017) *DAMNEWS* <digitalassetmanagementnews.org>: "While I assert that Machine Learning is an oxymoron, automation is an industrial process model which has been in-progress for over two hundred years and certainly does have a history of tangible and proven results"; Jack Stilgoe "Machine Learning, Social Learning and the Governance of Self-Driving Cars" (2018) 48(1) *Social Studies of Science* 25 at 35: "'autonomous system' is a misnomer, if not an oxymoron"; and Ilkka Tuomi "Vygotsky Meets Backpropagation: Artificial Neural Models and the Development of Higher Forms of Thought" in Carolyn Penstein Rosé and others (eds) *Artificial Intelligence in Education* (Springer International, Cham (Austria), 2018) 570 at 571: "From learning sciences point of view, 'deep learning' verges on being an oxymoron".

“blockchain”,⁶⁶ “social media”,⁶⁷ the “creative industries” establishing the creative economy,⁶⁸ the “sharing economy”,⁶⁹ “virtual reality”,⁷⁰ “heuristic algorithms”⁷¹ operating in “black boxes”⁷² and “synthetic biology”,⁷³

Summarised briefly, paradoxes and oxymora breed more of their kind and even mutually reinforce each other.⁷⁴ This trend is accelerating and intensifying to an extent that it can be observed across scientific disciplinary boundaries, as was explained in the following sentences:⁷⁵

- 66 See HQ Han “Opinion: Is a Permissioned Blockchain an Oxymoron?” Wharton Fintech (9 December 2018) <medium.com>; see also Vili Lehdonvirta “The Blockchain Paradox: Why Distributed Ledger Technologies May Do Little to Transform the Economy” (21 November 2016) Oxford Internet Institute: “... once you address the problem of governance, you no longer need blockchain; you can just as well use conventional technology that assumes a trusted central party to enforce the rules, because you’re already trusting somebody (or some organization/process) to make the rules. I call this blockchain’s ‘governance paradox’ ...” <www.oii.ox.ac.uk>.
- 67 See Alan Weiss and Chad Bar *Million Dollar Web Presence: Leverage the Web to Build Your Brand and Transform Your Business* (Entrepreneur Press, Irvine (California), 2012) at 210: “Let us also suggest that social media is an oxymoron because it is so often anti-social—profane, argumentative, loud, ill-informed, full of scams, and so on”; see also Robert Kraut and others “Internet Paradox: A Social Technology that Reduces Social Involvement and Psychological Well-Being?” (1998) 53(9) *American Psychologist* 1017 at 1029.
- 68 See Andy C Pratt “Cultural Industries and Public Policy: An Oxymoron?” (2005) 11(1) *International Journal of Cultural Policy* 31.
- 69 See Alex Pazaitis, Primavera De Filippi and Vasilis Kostakis “Blockchain and Value Systems in the Sharing Economy: The Illustrative Case of Backfeed” (2017) 125 *Technological Forecasting & Social Change* 105 at 105; “... the ‘sharing economy’ constitutes numerous contradictions in its purported functions and objectives, even claimed to be an oxymoron conceptually (Slee, 2016)”; see also Tom Slee *What’s Yours is Mine: Against the Sharing Economy* (OR Books, New York, 2016) at 10: “There is a contradiction built into the name ‘sharing economy’”.
- 70 See Gabriel Weimann *Communicating Unreality: Modern Media and the Reconstruction of Reality* (SAGE, London, 2000) at 330: “The phrase virtual reality is an oxymoron, a contradiction in terms. Virtual means not in fact; reality means in fact. VR, then, means not in fact”.
- 71 See, for example, Harold W Lewis III *The Foundations of Fuzzy Control* (Springer, New York, 1997) at 33: “The detailed mechanisms of several approaches to AI are often described as algorithms, and one can even see the phrase, heuristic algorithm, which would seem to be an oxymoron if the two concepts really were completely distinct”.
- 72 See Frank Pasquale *The Black Box Society: The Secret Algorithms That Control Money and Information* (Harvard University Press, Cambridge (Mass), 2015) at 191: “Black boxes embody a *paradox of the so-called information age*: Data is becoming staggering in its breadth and depth, yet often the information most important to us is out of our reach, available only to insiders” (emphasis added).
- 73 See Georg Toepfer “The Concept of Life in Synthetic Biology” in Margret Engelhard (ed) *Synthetic Biology Analysed: Tools for Discussion and Evaluation* (Springer, Berlin, 2016) 71 at 84: “For many contemporary authors ‘artificial life’ is an oxymoron, a contradiction in terms, the one belonging to nature, the other to human culture”.
- 74 See Neuwirth, above n 33, at 213.
- 75 Andreas Wagner *Paradoxical Life: Meaning, Matter, and the Power of Human Choice* (Yale University Press, New Haven, 2009) at 3 (emphasis added).

But early in the twentieth century, mathematicians began to discover paradoxes that cannot be ignored. These paradoxes occur in the very foundation of mathematics, on which natural science rests. One can even build machines, or computers, that embody these paradoxes. These paradoxes are thus far from mere games, and they reach much further than human language. The paradoxical tensions at which I have just hinted occupy much the same place: they are built into the foundation of the world. *They are everywhere.*

The massive occurrence of oxymora and paradoxes across different fields seems to underscore the need for a more coherent interdisciplinary and holistic understanding of each of the different scientific fields, both in isolation and in their mutual combination. Without this, it will be difficult to understand the system, to regulate it and to prevent harm, risk and injury deriving from its rapid, uncritical and, most of all, unregulated development. This poses a serious challenge to the law, but also provides it with an important task. The reason lies in the need to regulate the innovative and new technologies with wise foresight. More concretely, it means not just to legislate for the future but even to "legislate the future".⁷⁶ This requires regulation in a coherent yet diverse, comprehensive yet concise, and universal yet individual manner, so that the laws and regulations address and solve problems in the long term. Hence, at the present time we need regulation that is creative and that possibly uses oxymoronic legal instruments so that the adopted laws will at least outlive the phenomena they are meant to control.

With respect to the frequent occurrence of essentially oxymoronic concepts, often driven by novel technologies, new roles also emerge for comparative law, as a loyal apprentice, in the adaptation of law to the changing conditions in society. Even if critics may – in the old habits of the culture of contestation⁷⁷ – object to the observation that all of these concepts are oxymora or paradoxes, the concepts seem, at least, to invite the conclusion that today most novel phenomena and, in particular, regulatory issues concerned with innovation in general and with emerging as well as disruptive technologies in particular, can no longer be framed through binary

76 See Sarah A Binder "Can Congress Legislate for the Future" (15 December 2006) Robert F Wagner Graduate School of Public Service Research Brief No 3 (2006) <www.brookings.edu>.

77 See also Gabriel Segal "Poverty of Stimulus Arguments Concerning Language and Folk Psychology" in Peter Carruthers, Stephen Laurence and Stephen Stich *The Innate Mind: Foundations and the Future* (Oxford University Press, Oxford, 2008) vol 3, 90 at 101: "It may be that we cannot shake off our dualistic way of thinking because it is innate and modular, and innate modular beliefs are extremely hard to shift".

thinking and exclusive logic *alone*. This means that, moving away from old habits, it is important not to frame complex problems solely by way of dichotomies (that is, by listing pros and cons or applying black and white thinking or the law of the excluded middle). The emphasis here, however, is on “alone”, as people tend to shift from one extreme to the other but cannot find a proper and sustainable balance in the golden mean, as Chinese philosophy called it.⁷⁸

In other words, the controversy continues between an exclusive versus an inclusive law of the middle, or between binary versus polyvalent logic.⁷⁹ Moreover, this has even gained a new relevance in the light of technological progress. However, the main conclusion to be drawn from oxymora and paradoxes is not that one or the other prevails, but that both need to be assessed in accordance with their context and conditions. Therefore it was right to pose the question of whether there is a paradox or whether we have entered a world order in which dualistic thinking has somewhat lost its validity.⁸⁰ The answer is probably that such thinking has not entirely lost its validity but may have hit a ceiling and reached its limitations, and that it needs to be extended. Thus, oxymora and paradoxes call for an extension and infiltration of flexible logic to deal adequately with the challenges of today. They also serve as a linguistic bridge until evolution takes place and our wits have grown sharper.⁸¹

What this cognitive extension means for law and comparative law in terms of reasoning and logic, for one following a shift from a culture of contestation to one of contradiction, therefore needs to be critically scrutinised and debated further. The debate must address what can be derived from the trends reflected in parallel in language and technology, and in particular which role comparative law is expected to play in the future of legal education, theory and practice. It also requires that due attention be paid to the changing conditions in the context of the law, because “pure law”, namely its analysis without consideration of its context, has been termed an

78 On “Chung yung” or the practice of the mean or the search for the “perfect oxymoron”, see Neuwirth, above n 33, at 192–197.

79 See, for example, Mark van Atten and others *One Hundred Years of Intuitionism (1907–2007): The Cersy Conference* (Birkhäuser, Basel, 2000); and Gargi Mahay “The Law of Excluded Middle and Many-Valued Logic” (1981) IX(1) *Indian Philosophical Quarterly* 7.

80 See Dorothea Steiner “Globalization and Its Challenge to Higher Education: Some Reflections of a European Americanist Educator and Life-Long Learner” in Valeria Gennaro Lerda (ed) *Which “Global Village”? – Societies, Cultures, and Political-Economic Systems in A Euro-Atlantic Perspective* (Praeger, Westport (Conn), 2002) 213 at 216.

81 See Eden Phillpotts *A Shadow Passes* (Cecil Palmer & Hayward, London, 1918) at 19: “The universe is full of magical things patiently waiting for our wits to grow sharper”.

oxymoron.⁸² In addition to the external manifestation of context, the internal role of cognition in the field of law must be added, and this will be addressed in the following section.

III. The "Letter" and the "Spirit" of Comparative Law: Towards a New Logic?

It may be that's why few law students choose to take courses in comparative law. They regard it as an oxymoron.⁸³

The only constant being change,⁸⁴ an acceleration of perception of change shrinking time and space into a four-dimensional space-time continuum,⁸⁵ and the search for simplicity in complexity termed "*simplicity*",⁸⁶ can all be considered oxymoronic concepts useful for the task of defining and redefining the role of comparative law in law. Interestingly, comparative legal scholarship has also underscored the oxymoronic nature of the concept of "comparative law", when comparison is qualified as a purely descriptive process and law is understood as a normative process.⁸⁷ Despite the internationalisation of law over recent decades, it is also no surprise to read the phrase "comparative international law" as something of an oxymoron.⁸⁸ This is true at least for those who still dwell in the traditional conception that comparative law acts solely in an inter-state context. Comparative

82 *Silveira*, above n 34, at [21]: "The expression 'pure law' is an oxymoron since the law always needs a context within which it is to be considered".

83 George A Bermann and others "Comparative Law: Problems and Prospects" (2011) 26(4) *Am U Intl L Rev* 935 at 943.

84 See also Isaac Asimov "My Own View" in Robert Holdstock (ed) *The Encyclopedia of Science Fiction* (Octopus, London 1978) 5 at 5: "The only constant is change, continuing change, inevitable change, that is the dominant factor in society today".

85 See also Jean Gebser *Ursprung und Gegenwart: Erster Teil* (2nd ed, Novalis, Schaffhausen, 1999) at 107 (translated ed: Noel Barstad and Algis Mickunas (translators) Jean Gebser *The Ever-Present Origin, Volumes 1-2* (Ohio University Press, 1985)); and James Gleick *Faster: The Acceleration of Just About Everything* (Vintage Books, New York, 2000) at 6 and 53.

86 See also Jeffrey Kluger *Simplicity: Why Simple Things Become Complex (and How Complex Things Can Be Simple)* (Hyperion, New York, 2008).

87 Bermann, see above, n 83, at 943.

88 See Anthea Roberts and others "Conceptualizing Comparative International Law" in Anthea Roberts and Paul B Stephan (eds) *Comparative International Law* (Oxford University Press, Oxford, 2018) 3 at 3: "At first glance, 'comparative international law' might sound like an oxymoron. By definition, international law – at least when it arises from multilateral treaties or general custom – applies to all treaty parties or states equally".

law, too, has been described as “an enigmatic, *paradoxical* and elusive subject”.⁸⁹ It is the difficulty of grasping the contradictory nature of paradoxes and oxymora that may also prevent many scholars from taking comparative law seriously, even though it was said to be poised to become (or already has become) “the ‘science of tomorrow’, the tool for understanding laws and cultures in the globalizing world of the twenty-first century” as well as the “twenty-second century” and beyond.⁹⁰

Nevertheless, it was as early as 1928 that Benjamin N Cardozo made the significance of paradoxes for law explicit when – in his book entitled *Paradoxes of Legal Science* – he identified the great problems of the law as being “the reconciliation of the irreconcilable, the merger of antitheses, the synthesis of opposites”.⁹¹ At around the same time, John Dewey implicitly addressed the same problems related to contradictions, and highlighted the “infiltration into law of a more experimental and flexible logic” as a social as well as an intellectual need.⁹² This need has only grown since that time, in the wake of the internationalisation of law in connection with the globalisation of markets, based on related technological developments.

The present problems and challenges in the legal realm that are outlined above, like fragmentation, overregulation, the proliferation of laws and legal fora, and a lack of unity and coherence, strongly reflect the missed opportunities of the past. Such missed opportunities are large in number, but, to give a prominent example from international law, the failure of the International Trade Organization (ITO) to materialise in 1947 is still largely responsible for the present lack of coherence in the international legal system, as it gave rise to a larger rift between the governance of economic affairs on the one hand and the governance of political affairs on the other.⁹³ One can also mention the split of the regulation of international intellectual property rights by the Berne and Paris Conventions, or the similar division of indivisible human rights into two separate international human rights instruments, the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR), as further testimony to the tragedy of the absence of a real and truly global legal order.⁹⁴ These examples highlight the need for a comparison, and then for a better

89 Örüci, above n 3, at 1.

90 At 1. See also Mathias M Siems “Comparative Law in the 22nd Century” (2016) 23 MJ 2.

91 Benjamin N Cardozo *The Paradoxes of Legal Science* (Columbia University Press, New York, 1928) at 4–5.

92 John Dewey “Logical Method and Law” (1924) 10(1) Cornell LQ 17 at 27.

93 See also Rostam J Neuwirth and Alexandr Svetlicinii “The Economic Sanctions Over the Ukraine Conflict and the WTO: ‘Catch XXI’ and the Revival of the Debate on Security Exceptions” (2015) 49(5) Journal of World Trade 891 at 892.

94 See also Neuwirth, above n 33, at 88–89.

coordination between different legal regimes, both nationally and internationally, under the aegis of a truly global legal order.

Currently, the world is – at best – merely “theorising” about such a global legal order and is far from attempting to establish it.⁹⁵ Sadly, it seems more fashionable to respond to these challenges by way of exhuming outdated ideas, like the idea that we should “reverse the process of globalisation, and re-empower the nation state”;⁹⁶ this would mark a return to the Westphalian system, which was rightly called the “Westfailure system”.⁹⁷ It must be clear that for global challenges, especially those laid down in the Sustainable Development Goals (SDGs), a truly global legal order is needed and the nation state (alone) is the wrong way to meet these challenges and threats.⁹⁸

Thus, instead of searching for novel and creative solutions to these problems by working towards the goal of establishing a coherent global legal order, critics, journalists and diplomats, as well as policy makers and law makers, tend to use globally relevant and universally valid discourses, like those on equality, human rights, the rule of law, or democracy, in a divisive way rather than in a way that actually brings humanity closer together. In other words, the intention of discourses, including those on law, is often to erect walls rather than to build bridges.⁹⁹

The problem with these trends is that these discourses use the same language or may even refer to the same rights as those that are enshrined in an international treaty. This observation may lead back to the role of oxymora, and paradoxes as oxymoronic concepts. First, oxymoronic concepts may serve either to deepen the understanding, or – borrowing from George Orwell’s “doublethink” expressions of Newspeak language¹⁰⁰ – to disguise and distort true meaning, as in the representation of “fake news” or “alternative facts”, both of which have, interestingly, also been identified as oxymora.¹⁰¹ Second, language differences may also not be an obstacle to

95 See Andrew Halpin and Volker Roeben (eds) *Theorising the Global Legal Order* (Hart, Oxford, 2009).

96 See Yuval Noah Harari *21 Lessons for the 21st Century* (Spiegel & Grau, New York, 2018) at xvii.

97 See Susan Strange “The Westfailure System” (1999) 25(3) *Review of International Studies* 345.

98 See also Harari, above n 96, at 121: “As in the case of climate change, so also with technological disruption, the nation state is simply the wrong framework to address the threat”.

99 See also Rostam J Neuwirth “The Enantiosis of BRICS: BRICS La[w]yers and the Difference that They Can Make” in Rostam J Neuwirth Alexandr Svetlicinii and Denis De Castro Halis (eds) *The BRICS-Lawyers’ Guide to Global Cooperation* (Cambridge University Press, Cambridge, 2017) 8 at 21.

100 George Orwell *Nineteen Eighty-Four* (Penguin Books, London, 2000) at 156.

101 See Ireton and Posetti, above n 48; and Blommaert, above n 48.

closer cooperation and understanding, as, paradoxically again, persons and nations can also be divided by a common language.¹⁰²

This means that we either have to go back to scratch or we must look more closely at the origins of these confusions that arise from contradictions. This means finding ways of making sense of the paradoxes and using them to shape a better destiny, as Charles Handy suggested.¹⁰³ In this respect, and for the law, George P Fletcher provides advice by writing that “if we wish to avoid disabling contradictions, we must reach a deeper understanding of the legal premises that guide our thinking”.¹⁰⁴ This entails digging deeper and developing a deeper cognitive common language, namely one of the mind, including the senses and cognition. This is how the term “common language” should be interpreted, when used as a way to create a global legal order by transcending the present international discord that characterises “the different legal provisions and perspectives found within the societies of the world”.¹⁰⁵

Clearly, the inability to apply paradoxical or oxymoronic thinking, that is, to shed the habit of exclusively using dualistic thinking and binary logic, stands in the way of successful conceptual solutions to many modern complex problems. Taking the controversy of the universality versus the (cultural) relativism of human rights as an example, a paradoxical interpretation would bring to the fore that, paradoxically, we are all only truly the same in one aspect, namely that we are all unique and can never be at the same time and at the same place as anyone else.¹⁰⁶

In this respect, comparative law was used by H Patrick Glenn to show that the diversity of the world’s legal traditions poses no obstacle to an efficient global legal framework.¹⁰⁷ This is especially the case when the diversity is understood on the basis of “Com-paring” – a “convivencia” or “process of peaceful co-existence (in spite of difference, in spite of potential conflict), in a way which ensures not uniformity but ongoing diversity”.¹⁰⁸ One of the necessary preconditions for solving the paradox

102 See, for example, Christopher Davies *Divided by a Common Language: A Guide to British and American English* (Houghton Mifflin, Boston, 2005) at viii: “England and America are two countries divided by a common language’ attributed to George Bernard Shaw”.

103 See Handy, above n 36.

104 George P Fletcher “Paradoxes in Legal Thought” (1985) 85(6) *Colum L Rev* 1263 at 1292.

105 See Halpin, above n 95, at 6.

106 See also Steve J Stern and Scott Straus “Embracing Paradox: Human Rights in the Global Age” in Steve J Stern and Scott Straus (eds) *The Human Rights Paradox: Universality and its Discontents* (The University of Wisconsin Press, Madison, 2014) 3 at 3.

107 H Patrick Glenn *Legal Traditions of the World: Sustainable Diversity in Law* (3rd ed, Oxford University Press, Oxford, 2007) at 358.

108 H Patrick Glenn “Com-paring” in Esin Orucu and David Nelken (eds) *Comparative Law: A Handbook* (Hart, Oxford, 2007) 91 at 92.

of unity in diversity or the oxymoron of "*discordia concors*"¹⁰⁹ is therefore to attempt to compare the incomparable by the infiltration of a more flexible, multivalent or new logic in the process of legal reasoning.¹¹⁰ The application of a new logic may be useful in reconciling conflicts, as a logic that is too rigid may create conflicts that do not exist in reality.¹¹¹ This was also described by the finding that "... laws may differ but they do not conflict: the only possible conflict is in the mind of the judge".¹¹²

Expressed trivially, while AI and even various ("stupid") machines like washing machines have already abandoned the law of the excluded middle and operate on the basis of "fuzzy logic"¹¹³ as well as oxymoronic or non-binary concepts used in computer codes¹¹⁴, the legal community appears to be stubbornly holding on to the law of the excluded middle like rats on a sinking ship. Or, framed by the apparently oxymoronic concept of "machine ethics", it can be asked whether we can teach machines ethics, or how to distinguish right from wrong,¹¹⁵ which is something that even humans continue to have long-lasting struggles with. In turn, it can also

- 109 See, for example, Werner Kaegi "Discordia Concors: Vom Mythos Basels und von der Europa-idee Jacob Burckhardts" in Marc Sieber (ed) *Discordia Concors – Festgabe für Edgar Bonjour zu seinem siebzigsten Geburtstag am 21. August 1968* (Helbing & Lichtenhahn, Basel: 1968) vol 1, 131 mainly at 136–152.
- 110 See generally H Patrick Glenn and Lionel D Smith (eds) *Law and the New Logics* (Cambridge University Press, Cambridge, 2017).
- 111 See, for example, Adam M Brandenburger and Barry J Nalebuff *Co-opetition: A Revolution Mindset That Combines Competition and Cooperation: The Game Theory Strategy That's Changing the Game of Business* (Doubleday, New York 1996) at 234: "The problem is that mental boundaries aren't real boundaries—there are no real boundaries".
- 112 See H Patrick Glenn "Choice of Logic and Choice of Law" in H Patrick Glenn and Lionel D Smith (eds) *Law and the New Logics* (Cambridge University Press, Cambridge, 2017) 162 at 162, citing Lawrence Collins (ed) *Dacey and Morris on the Conflict of Laws* (12th ed, Stevens, London, 1993) vol 1 at 33.
- 113 See, for example, Bart Kosko *Fuzzy Thinking: The New Science of Fuzzy Logic* (Hyperion, New York, 1993) at 180–190.
- 114 See, for example, Lotfi A Zadeh "Fuzzy Logic = Computing with Words" (1996) 4(2) IEEE Transactions on Fuzzy Systems 103; and Lotfi A Zadeh "Knowledge Representation in Fuzzy Logic" in Ronald R Yager and Lotfi A Zadeh (eds) *An Introduction to Fuzzy Logic Applications in Intelligent Systems* (Springer, New York, 1992) 1 at 1. See, generally, W Xu and others "The Cognitive Features of Programming Language and Natural Language" in Z Shi, C Pennartz and T Huang (eds) *Intelligence Science II, ICIS 2018, IFIP Advances in Information and Communication Technology* (Springer, Cham, 2018) 184; and Michael D Ernst "Natural language is a Programming Language: Applying Natural Language Processing to Software Development" in Ras Bodik and Shriram Krishnamurthi (eds) *SNAPL 2017: The 2nd Summit on Advances in Programming Languages* (Dagstuhl Publishing, Wadern, 2017) 4:1.
- 115 See also Wendell Wallach and Colin Allen *Moral Machines: Teaching Robots Right from Wrong* (Oxford University Press, Oxford, 2009) at 142.

be asked whether we can allow machines to teach us ethics.¹¹⁶ Both questions are paradoxical and support the call for the development of skills in non-binary modes of thinking and multivalent logic.

At the same time, a more flexible logic also requires or may even foster a more integrated mode of perception of the individual senses, as is comprised in the notion of “synaesthesia” or “sensing together”.¹¹⁷ The reason for this is that the different senses may, in isolation, not only give rise to bad decision making but also contribute to the fragmentation of perception, of laws and of the international legal system as a whole. Thus synaesthesia, or a greater union of the senses, may constitute the next “cognitive revolution”, fostered by the rise of essentially oxymoronic concepts and their function as “verbal LSD”, and may, ultimately, be supportive of greater unity, coherence and convivencia in a future global legal order.¹¹⁸

Cutting a long story short, the entire debate about the limitations of dualistic thinking and binary logic and their impact on perception, the senses and ultimately on law making and law enforcement, can be paraphrased in the apparent dichotomy and idiomatic antithesis of the spirit versus the letter of the law. This antithesis strongly displays the preference for, and the limitations of, dualistic thinking, because it reduces legal interpretation to two choices only, namely that one “can approach a law *literally* or one can instead focus on its *intent*”.¹¹⁹ In other words, like all dualistic thinking, it “trades accuracy for simplicity”¹²⁰ or else “justice for (a legal fiction of) legal certainty”.

This debate has also been discussed in Talmudic law, using the term “*lifnim mishurat hadin*”, which describes “that which goes beyond the boundaries of the law”.¹²¹ In contrast to a dualistic approach, which presents only a choice between two

116 See, for example, Blay Whitby “On Computable Morality: An Examination of Machines as Moral Advisors” in Michael Anderson and Susan Leigh Anderson (eds) *Machine Ethics* (Cambridge University Press, Cambridge, 2011) 138 at 139.

117 See Philip Winn (ed) *Dictionary of Biological Psychology* (Routledge, London, 2001) at 1657; Lynn C Robertson and Noam Sagiv (eds) *Synesthesia: Perspectives from Cognitive Neuroscience* (Oxford University Press, Oxford, 2005) at 3; and Richard E Cytowic *Synesthesia: A Union of the Senses* (2nd ed, MIT Press, Cambridge (Mass), 2002).

118 See Neuwirth, above n 33, at 239 and 234–243. See also Lionel Bently “Introduction” in Lionel Bently and Leo Flynn (eds) *Law and the Senses: Sensational Jurisprudence* (Pluto Press, London, 1996) 1 at 3: “This acceptance of Cartesian dualism also suggests why law has rarely questioned its own senses, i.e. its own sources of knowledge; namely, because law associates itself purely with reason”.

119 See Stella Nkomo “Moving from the Letter of the Law to the Spirit of the Law: The Challenges of Realising the Intent of Employment Equity and Affirmative Action” (2011) 77 *Transformation: Critical Perspectives on Southern Africa* 122 at 122.

120 See Kosko, above n 113, at 21.

121 See Saul J Berman “Lifnim Mishurat Hadin (I)” (1975) 26(1–2) *Journal of Jewish Studies* 86 at 86.

notions, *lifnim mishurat hadin* seeks to combine the two, because it "designates rather the use of the legal system as a whole, its positive law and as well its superseded law, to produce just results".¹²²

The search for the boundaries of the law can also be taken as a mandate for the future of comparative law. Alternatively, comparative legal research must endeavour to combine the spirit and the letter of the law (that is, the external and the internal manifestations of the legal universe) more strongly. As the principal driver for the "legal science of tomorrow", comparative legal research can enhance the understanding of the law, notably by searching for solutions to problems that exist not only externally in reality, technology, statistics or positive laws but also in the deepest layers of the cognitive level from language via logic to the origins of existence. Comparative legal research must engage on a journey to the place from which law and normativity truly emanate, that is, the human mind.¹²³ On this journey, oxymora and paradoxes can point the way, as the mind itself appears to be of paradoxical origin and nature.¹²⁴

IV. Future Applications of Comparative Law

What then of "Comparative Law"? Are we announcing the death of the field? Perhaps not of the field, but of the word. The field is flourishing. ... in one way or another we are all comparativists.¹²⁵

First, this article noted the apparent phenomenon of a rise in oxymora and paradoxes, or so-called "essentially oxymoronic concepts". While pervading all areas, this rise was also exemplified with a few selected, and possibly hyped, concepts from the realm of new technologies, like the one of artificial intelligence. It was mentioned, too, that comparative law is an oxymoron, which can be interpreted as giving rise to a new role for and application of comparative law in support of the "legal science of tomorrow". When combined, what does the trend of a rise in

122 Saul J Berman "Lifnim Mishurat Hadin (II)" (1977) 28(2) *Journal of Jewish Studies* 181 at 193.

123 See Neuwirth "Law as Mnemonics: The Mind as the Prime Source of Normativity" (2008) 2(1) *European Journal of Legal Studies* 143 at 144.

124 See Narinder Kapur "Paradoxes of the Mind" (2012) 48(3) *Cortex* 378 and Narinder Kapur (ed) *The Paradoxical Brain* (Cambridge University Press, Cambridge, 2011) at 1.

125 International Society of Public Law (ICON-S) "Mission Statement" available at <www.icon-society.org>.

oxymora and paradoxes mean for the future role of comparative law in law and legal science?

The need for comparative law is driven by the growing complexity and overregulation in the wake of globalisation and legal pluralism. As a result of this complexity and overregulation, legal conflicts in the strict sense between and within legal systems,¹²⁶ antinomies,¹²⁷ limping legal acts,¹²⁸ legal dilemmas and so-called “irresolvable norm conflicts”¹²⁹ and other challenges to law, are thriving. Moreover, such conflicts are likely to increase in number and intensity as the problems are exacerbated by rapid innovation and the emergence of new technologies as well as the convergence of existing ones. This raises the important question of how these challenges can be best addressed through law and what role comparative law can play in this task.

As a first functional role, comparative law will become stronger as the legal science of the future. This task begins in legal education, even though, or precisely because, students may initially find comparative law to be paradoxical and consider it an oxymoron. Education is important because it has a long-term effect, but, paradoxically, it can be both the cause of and the solution to humanity’s fundamental problems.¹³⁰ It has been shown that at least some of the roots of the 2008 global financial crisis are to be found in (American) business schools.¹³¹ By the same token, law schools may be responsible for the “territorial mess”¹³² in intellectual property law, the fragmentation of international law and the growing inequality around the world, to mention but a few examples. Ultimately, law schools and lawyers can be blamed for most problems in the world, if not by their legal acts, then on the basis

126 See also Jennifer L Balint “The Place of Law in Addressing Internal Regime Conflicts” (1996) 59(4) LCP 103; and Margaret A Young (ed) *Regime Interaction in International Law: Facing Fragmentation* (Cambridge University Press, Cambridge, 2012).

127 See, for example, Chaim Perelman “Les antinomies en droit” (1964) 18 *Dialectica* 392 at 393.

128 See, for example, Mireille MM van Eechoud *Choice of Law in Copyright and Related Rights: Alternatives to the Lex Protectionis* (Kluwer Law International, The Hague, 2003) at 18: Limping legal relationships happen “whenever the legal position of parties varies when considered from the viewpoint of different legal systems”.

129 See, for example, Valentin Jeutner *Irresolvable Norm Conflicts in International Law: The Concept of a Legal Dilemma* (Oxford University Press, Oxford, 2017).

130 See also Rostam J Neuwirth “On the Origin of Legal Diversity by Means of Comparative Law, or the Role of Legal Education in the Solution of Legal Conflicts” in Mahendra P Singh and Niraj Kumar (eds) *Indian Yearbook of Comparative Law 2018* (Springer, Berlin, 2019).

131 See Robert A Giacalone and Donald T Wargo “The Roots of the Global Financial Crisis Are in Our Business Schools” (2009) 6 *Journal of Business Ethics Education* 147.

132 Peter K Yu “Region Codes and the Territorial Mess” (2012) 30(2) *Cardozo Arts & Ent LJ* 187.

of their omission to regulate. Therefore, legal education must follow other fields that have already embraced paradoxical or oxymoronic thinking as a source of creative problem-solving mechanisms (as well as potentially as a way to create new problems).¹³³ The so-called "lawyer paradox", a logical dilemma for the considering court posed in terms of the rhetoric used in a lawsuit between the law professor Protagoras and his (former) student Euathlus, provides a good starting point for "oxymoronic legal education" and problem solving.¹³⁴ This case, whether anecdotal or real, underscores the intrinsic ties between theory and practice, given that it was also discussed in a real courtroom later.¹³⁵

Last but not least, legal education is – in a time of life-long learning – also a broader concept including the training of professionals, and thus contributes to the legislative and regulatory efforts of law and policy makers. For instance, after future lawyers have become generally familiar with new and multivalent logics in addition to binary modes of thinking, they can also put them to use in various contexts of their practice. This means that law combines both theory and practice, and comparative law is conceptually "applied research", to use yet another possible oxymoron.¹³⁶

In its second functional role, comparative law will serve as an engine for enhanced regulatory harmony, through greater transdisciplinarity. This task means that current levels of legal and scientific fragmentation must be addressed, and a greater consistency must be found between laws, through inter- and notably trans-disciplinarity, the latter being understood as a way to the better understanding of the world through the unity of knowledge.¹³⁷ Given that reality is interdisciplinary and complex, but science is being fragmented by excessive levels of specialisation, comparative law must help to foster unity by "comparing the

133 See, for example, James L Eliason "Using Paradoxes to Teach Critical Thinking in Science" (1996) 25(5) *Journal of College Science Teaching* 341 at 344; Derm Barrett *The Paradox Process: Creative Business Solutions ... Where You Least Expect to Find Them* (AMACOM, New York, 1998); Marianne W Lewis and Gordon E Dehler "Learning through Paradox: A Pedagogical Strategy for Exploring Contradictions and Complexity" (2000) 24(6) *Journal of Management Education* 708; and Matthew Bryant, *Oxymoron? A Practical Guide to Fun and Effective Teaching* (iUniverse, New York, 2006). See also Neuwirth, above n 130; and Neuwirth, above n 33, at 178–183.

134 See Neuwirth, above n 33, at 149–150.

135 *State v Jones* 70 NE 2d 913 (Ohio Ct App 1946).

136 Lewis M Branscomb *Confessions of a Technophile* (American Institute of Physics, Woodbury, 1995) at 27: "If research means asking new questions and 'applied' means 'used', then 'applied research' is an oxymoron".

137 See Basarab Nicolescu "Methodology of Transdisciplinarity – Levels of Reality, Logic of the Included Middle and Complexity" (2010) 1(1) *Transdisciplinary Journal of Engineering & Science* 19 at 22.

(seemingly) incomparable”, to paraphrase Cardozo’s account of law’s fundamental problems. This difficult task is related to another oxymoron, the one of “pure law”, because comparative law needs to bridge the frequent gaps between the law and its context. This task involves various levels of comparison in law, from the letter to the spirit or from language and logic to cognition.

This means that, in addition to the traditional comparison of the black letter law of different national jurisdictions as well as the comparison between international legal regimes,¹³⁸ comparative law must use various novel applications in the comparative method, especially in the context of regulatory attempts to control complex emerging technologies. Examples of such new applications include the comparison of hype cycles of different technologies,¹³⁹ the comparison of different algorithms in terms of their optimal performance or the establishment of “algorithmic collusion” in competition law,¹⁴⁰ as well as questions of cultural or “geographical” context in terms of logic and cognition.¹⁴¹ The relevance of these fields surfaces, for instance, in complex regulatory problems like those posed as the trolley problem related to “self-driving cars” or “autonomous machines”, where an algorithm literally decides between life and death.¹⁴² The trolley problem also serves as a reminder of the interdisciplinarity of reality and the universality of science, as has been discussed many years ago in different contexts and as has again proved to be relevant in a modern context, that of autonomous cars.¹⁴³ Logical

138 See also Rostam J Neuwirth and Alexandr Svetlicinii “Law as a Social Medicine: Enhancing International Inter-Regime Regulatory Cooperation as a Means for the Establishment of a Global Health Governance Framework” (2015) 36 (3-4) *J Leg Med* 330 at 332.

139 See, for example, Harro van Lente, Charlotte Spitters, and Alexander Peine “Comparing Technological Hype Cycles: Towards a Theory” (2013) 80 *Technological Forecasting & Social Change* 1615.

140 See, for example, Vahid Beiranvand, Warren Hare, and Yves Lucet “Best Practices for Comparing Optimization Algorithms” (2017) 18 *Optimization and Engineering* 815; and Ariel Ezrachi and Maurice E Stucke “Artificial Intelligence & Collusion: When Computers Inhibit Competition” (2017) 2017(5) *U Ill L Rev* 1775.

141 See, for example, Kaiping Peng and Richard E Nisbett “Culture, Dialectics, and Reasoning About Contradiction” (1999) 54(9) *American Psychologist* 741 at 741; and Richard E Nisbett and others “Culture and Systems of Thought: Holistic Versus Analytic Cognition” (2001) 108(2) *Psychological Review* 291 at 293. See also Max Hamburger “Aristotle and Confucius: A Comparison” (1959) 20(2) *Journal of the History of Ideas* 236.

142 See, for example, Amar Kumar Moolayil “The Modern Trolley Problem: Ethical and Economically-Sound Liability Schemes for Autonomous Vehicles” (2018) 9 *Case Western Reserve Journal of Law, Technology & the Internet* 1.

143 See, for example, Philippa Foot “The Problem of Abortion and the Doctrine of the Double Effect” (1967) 5 *Oxford Review* 5 and Hans Welzel “Zum Notstandsproblem” (1951) 63(1) *Zeitschrift für die gesamte Strafrechtswissenschaft* 47.

dilemmas, however, are also of much wider relevance in law.¹⁴⁴ After all, humans and machines seem to share the use of algorithms and the character of a black box.¹⁴⁵ Thus, comparative law as an "engine" for transdisciplinarity can support the law as it "engineers" bridges between scientific disciplines. This is particularly true in view of the need to tackle fragmentation and conflicts of laws (in the strict sense), given that it has been said that "[C]omparative law can help to identify the paths traced by norm producers in fragmented spaces".¹⁴⁶

A third important functional role is therefore found in working towards the codification of a Global Code of Cognitive Choice of Law (GCCCL). More concretely, this means addressing various problems at a deeper layer than their external manifestation in language, technology, or other factual ways, and creating a guidebook for how to deal with various cognitive problems or logico-legal dilemmas. After all, past efforts to provide the grounding of a code,¹⁴⁷ like the *Code Napoleon*, may be equivalent to the processing of big data about human behaviour and psychology collected from legal disputes over the centuries. To illustrate the practical relevance of such a codification effort, one can mention two recent cases, one real and one partially hypothetical, but both highly paradoxical.

The first case is known as the so-called *Black Hole* case, and is a series of cases brought before different courts in Europe and the US in anticipation of the planned operation of the Large Hadron Collider (LHC) by CERN in Geneva.¹⁴⁸ The cases were concerned with the potential danger that these experiments could swallow the planet, and all humanity with it, into a black hole. Given that three courts were involved, this was not only a traditional choice of law problem, but also a problem

144 See also Valentin Joutner *Irresolvable Norm Conflicts in International Law: The Concept of a Legal Dilemma* (Oxford University Press, Oxford, 2017) at 4–8.

145 Compare Harari above n 1, at 83: "Organisms are Algorithms"; and Luc Desbois "Deal with Complexity and Risk in Professional Relationship: The Transdisciplinary Logic" (2012) 3 *Transdisciplinary Journal of Engineering & Science* 87 at 88: "More than any other complex 'system', the human is a 'black box' and nobody knows how the situation will be 'digested' and what it will lead to".

146 Marcelo Dias Varella *Internationalization of Law Globalization, International Law and Complexity* (Springer, Berlin, 2014) at 116.

147 See generally H Patrick Glenn "The Grounding of Codification" (1998) 31 *UC Davis Law Review* 765.

148 See generally Eric E Johnson "The Black Hole Case: The Injunction Against the End of the World" (2009) 76(4) *Tenn L Rev* 819.

that involved a strange paradox between legal versus scientific authority.¹⁴⁹ The paradox is that usually a court seeks support from expert scientific witnesses to gain a better understanding of the facts and then decides the case based on legal analysis. In this case, however, the roles were reversed, and the courts were asked by members of the scientific community to assess the potentially lethal effects of the planned experiments.¹⁵⁰ Luckily no one was harmed when the courts rejected all the claims, and the experiments were conducted; instead, the “God particle” (or Higgs Boson) was found.¹⁵¹ The happy end to this story does not mean that the question will not be raised in the next case.

The second case can be called the *Mona Lisa Smile* case, and can be construed to show the significance of transdisciplinarity in legal practice in form of a Code of Choice of Scientific Discipline. The case is based on a rule in the Laws of Chess (LC) issued by the World Chess Federation, which stipulates that a referee shall declare a game forfeit if one of the players causes “unreasonable annoyance” by, for instance, continually smiling at the other player.¹⁵² Reducing the facts of a “hard case”¹⁵³ regarding such possible annoyance, one could take Mona Lisa’s enigmatic smile painted by Leonardo Da Vinci as evidence. As has been done several times in classrooms, if the referee of the case searched for a scientific assessment of whether Mona Lisa is smiling or not, s/he would be likely to come across scientific publications by three different experts. According to the first expert, Mona Lisa is not smiling and she would not forfeit the game of chess by reason of having caused annoyance.¹⁵⁴ The second expert would find her to be smiling and, subsequently, the judge would declare that she had lost the game.¹⁵⁵ So far so good, but, most interestingly, the third expert would conclude that her expression forms a “coherent mixture”, a

149 See also the paradox of scientific authority in Wiebe E Bijker, Roland Bal and Ruud Hendriks *Paradox of Scientific Authority: The Role of Scientific Advice in Democracies* (MIT Press, Cambridge (Mass), 2009) at 1: “The cases in which scientific advice is asked most urgently are those in which the authority of science is questioned most thoroughly” (footnote omitted).

150 See also Neuwirth, above n 33, at 66 (Fn 52).

151 See, for example, John Alison *The Road to Discovery: Detector Alignment, Electron Identification, Particle Misidentification, WW Physics, and the Discovery of the Higgs Boson* (Springer, Cham, 2015) at 285.

152 Compare Art 12.6 and 12.8 LC <www.fide.com>.

153 Ronald Dworkin “Hard Cases” (1975) 88 Harv L Rev 1057 at 1079.

154 See Joseph E Borkowski “Mona Lisa: The Enigma of the Smile” (1992) 37(6) Journal of Forensic Sciences 1706 at 1706, 1708.

155 See Ambar Chakravarty “Mona Lisa’s Smile: A Hypothesis Based on a New Principle of Art Neuroscience” (2010) 75 Medical Hypotheses 69.

superposition of both cheerfulness and sadness, which means that, paradoxically, she is found to be both smiling and not smiling at the same time.¹⁵⁶

In sum, the *Mona Lisa* case illustrates that a simple factual question posed to experts can cause scientific confusion. It also shows that, depending on the scientific discipline involved (for example, dental science, neuroscience or quantum physics), the answers may be diametrically opposed, and so the legal outcome would be that an accused is guilty, or innocent, or – paradoxically again – both “guilty and innocent” at the same time. Being guilty and innocent at the same time is not an entirely hypothetical scenario, but has actually been termed a “judicial oxymoron”¹⁵⁷ in the context of a guilty plea under the Alford doctrine.¹⁵⁸ *The Mona Lisa* case also shows that, implicitly, different scientific fields may apply different logics, in the same way as quantum physics seems to observe more fuzzy conditions that are not easily subsumed under the solely binary logic of the law of the excluded middle.

Thus, there are already numerous cases that struggle with the question of which logic, a bivalent one or a multivalent one, applies, especially when it comes to a confrontation with oxymora in the courtroom.¹⁵⁹ Given the rapid pace of innovation today and a sensation of the “shrinking of time”, it is likely that the current trend will intensify and that future problems of this kind will increase in number in the wake of linguistic trends towards oxymora and paradoxes. These developments will pose serious challenges to the role and rule of law in societies around the world and the global community as a whole. They, therefore, require creative responses on behalf of the legal community, notably with lawyers working towards the establishment of a coherent but diverse, and stable but dynamic, system of global law. To this end, various new legal instruments need to be designed, which can take the form of different so-called “experimental” forms of legislation that also lie beyond the law.¹⁶⁰ Examples of such experimental legislation include sunset clauses as a form of temporary regulation; this assumes greater importance given the rapidly changing regulatory environment.

156 See Slobodan Prvanovic “Mona Lisa – Ineffable Smile of Quantum Mechanics” (Institute of Physics, Belgrade (Serbia) 2003) at 1, 7 <arxiv.org>.

157 *Austin v Southwark London Borough Council* [2011] AC 355 at 42 (UKSC).

158 *North Carolina v Alford* 400 US 25, 28 (1970); see also Todd Markle “The Misunderstood Alford Plea: A Primer” (2013) 19(1) Ga BJ 8.

159 For an overview of the use of oxymora in the courtroom, see Neuwirth, above n 33, at 66–86.

160 See, for example, Sofia Ranchordás *Constitutional Sunsets and Experimental Legislation: A Comparative Perspective* (Edward Elgar, Cheltenham, 2014) mainly at 173–208.

These instruments do, however, not stop there, as the new tasks for comparative law discussed above may indicate. They also include various forms of holistic regulation, ranging from self-regulation via co-regulation to deregulation against the backdrop of regulatory co-competition, that is, regulatory diversity and regulatory harmonisation.¹⁶¹ Such regulatory forms, however, must be construed outside the usual dichotomies.¹⁶² For instance, they may take creative forms of parallel (but congruent) regulation as a mixture of self-regulation and public regulation or legislation;¹⁶³ or else a combination of regulation and automation.¹⁶⁴ Such parallel combinations of regulation and automation can also mean that regulation is adopted not “*ex post*” but instead “*ab initio*”, in parallel with the design of the new technology intended for the market. Smart contracts such as “‘code-and-contract’ hybrids”¹⁶⁵ and digital rights management (DRM)¹⁶⁶ already display a division of labour between machines and lawyers in the formation and enforcement of contracts.

Overall, given the increasing complexity of regulatory problems, even the restricted circle of subjects of regulation may be expanded by granting animals, plants, rivers and even machines legal personality.¹⁶⁷ For instance, it is perfectly sensible to ask why robots should not pay taxes too.¹⁶⁸

As warranted by the growing number of oxymora and paradoxes framing various legal dilemmas, humans and lawyers too must learn to transcend the limitations imposed by dualistic thinking and bivalent logic. Thus, generally, the

161 See, for example, J Kirkbride and S Letza “Regulation, Governance and Regulatory Collibration: Achieving an ‘Holistic’ Approach” (2004) 12(1) CG 85.

162 See also Darren Sinclair “Self-Regulation Versus Command and Control? Beyond False Dichotomies” (1997) 19(4) Law & Policy 529.

163 See, for example, John Kay and John Vickers “Regulatory Reform in Britain” in Charles Wyplosz (ed) *Thirty Years of Economic Policy: Inspiration for Debate* (Oxford University Press, Oxford, 2015) 585 at 623 and Mark Bray and Peter Waring “‘Complexity’ and ‘Congruence’ in Australian Labour Regulation” (2005) 47(1) JIR 1 at 9.

164 See, for example, Lawrence J Prinzel III, Alan T Pope and Frederick G Freeman “Physiological Self-Regulation and Adaptive Automation” (2002) 12(2) The International Journal of Aviation Psychology 179.

165 See Mateja Durovic and André Janssen “The Formation of Blockchain-based Smart Contracts in the Light of Contract Law” (2019) 6 ERPL 753.

166 See Paula Samuelson “DRM {and, or, vs.} the Law” (2003) 46(4) Communications of the ACM – Digital rights management 41.

167 See, for example, Gunther Teubner “Rights of Non-humans? Electronic Agents and Animals as New Actors in Politics and Law” (2006) 33(4) Journal of Law and Society 497; and James D K Morris and Jacinta Ruru “Giving Voice to Rivers: Legal Personality as a Vehicle for Recognising Indigenous Peoples’ Relationship to Water?” (2010) 14(2) ALLR 49.

168 See also Ryan Abbott and Bret Bogenschneider “Should Robots Pay Taxes: Tax Policy in the Age of Automation” (2018) 12(1) Harvard Law & Policy Review 145.

drastic changes in the era of the Anthropocene,¹⁶⁹ and of singularity¹⁷⁰ as a union of humans and machines, require an expansion of the cognitive framework. Dualism in combination with the law of the excluded middle has met with its intrinsic limitations, given that it traded accuracy for simplicity. In practice, the need to complement dualism by a more flexible logic is already visible in novel regulatory approaches using oxymora, as is shown by the terms "regulatory coepetition",¹⁷¹ "multilateralising regionalism"¹⁷² and "regulatory framemgration".¹⁷³

As a whole, these essentially oxymoronic concepts indicate that global jurisdiction is facing multiple apparently contradictory trends, such as those of regulatory cooperation towards greater harmonisation and regulatory diversity towards greater differentiation, thus either integrating or fragmenting (that is, "framemgrating") the future global legal order.¹⁷⁴ In facing these profound contradictions, which are enshrined in perplexing oxymora and paradoxes, in the global governance debate, comparative law is thus called upon to play an important role, particularly against the backdrop of globalisation and legal pluralism, broadly described as a condition of "complexities of law in a world of hybrid legal spaces, where a single act or actor is potentially regulated by multiple legal or quasi-legal regimes".¹⁷⁵ For this and other related problems, several new roles for comparative law may prove to be a vital support if the law to preserve its integrity over time. As

169 See generally Davor Vidas and others "International Law for the Anthropocene? Shifting Perspectives in Regulation of the Oceans, Environment and Genetic Resources" (2015) 9 *Anthropocene* 1.

170 See Ray Kurzweil *The Singularity is Near: When Humans Transcend Biology* (Viking, New York, 2005).

171 See, for example, Daniel C Esty and Damien Geradin "Regulatory Co-opetition" (2000) 3(2) *JIEL* 235 at 235. See also Neuwirth, above n 138.

172 See Richard Baldwin and Patrick Low (eds) *Multilateralizing Regionalism* (Cambridge University Press, Cambridge, 2008).

173 On framemgration in general, see, for example, James N Rosenau *Along the Domestic-Foreign Frontier: Exploring Governance in a Turbulent World* (Cambridge University Press, Cambridge, 1997) at 99–117.

174 See also Joost Pauwelyn "Bridging Fragmentation and Unity: International Law as a Universe of Inter-Connected Islands" (2004) 25 *Mich J Intl Law* 903; Andreas Fischer-Lescano and Gunther Teubner "Regime-Collisions: The Vain Search for Legal Unity in the Fragmentation of Global Law" (2004) 25 *Mich J Intl Law* 999 and Eyal Benvenisti, International Law Commission (ILC) *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law* in Martti Koskeniemi (ed) (Report of the Study Group of the International Law Commission), A/CN.4/L.682 (13 April 2006); and George W Downs "The Empire's New Clothes: Political Economy and the Fragmentation of International Law" (2007) 60 *Stan L Rev* 595.

175 See Paul Schiff Berman "Global Legal Pluralism" (2007) 80(6) *S Cal L Rev* 1155 at 1155.

the law is confronted with numerous uncertainties rooted in black boxes of both minds and machines, comparative law may provide the fresh impetus to think outside the box or even to enlarge the box in the context of legal science.

V. Conclusion: Oxymora We Live By

Metaphor is for most people a device of the poetic imagination and the rhetorical flourish ... We have found, on the contrary, that metaphor is pervasive in everyday life, not just in language but in thought and action.¹⁷⁶

Drastic technological changes in the recent decades, occurring at an accelerating pace and known by various oxymoronic concepts like “artificial intelligence”, “heuristic algorithms”, “blockchain” or “synthetic biology”, threaten to disrupt not only business and societies but also the law. These changes raise the question of how the law can preserve its integrity over time.¹⁷⁷ How can the law maintain a constructive role in the future of humanity and, paradoxically, also increase its key role by shaping the future itself? To answer this question, the present article first discussed selected examples of novel and emerging technologies and how there seems to be a wider trend towards framing them by way of so-called “essentially oxymoronic concepts”, mainly oxymora and paradoxes. This trend fits with a wider trend of the advent of an age of paradox, meaning that law has also now entered a *Time of Oxymora* – a time in which various boundaries, conceptual or real, are becoming blurred, and dichotomies are vanishing. By the same token, even “comparative law” has been described as an oxymoron.

This wider trend, both linguistic and technological, renews the need to address the principal question, in science as in law, of which logic to apply – a dualistic or binary logic, or a fuzzier, multivalent one? A first answer may indicate the need to abandon the exclusive use of dualistic thinking, and expand and complement our view by the use of more oxymoronic modes of thinking. Briefly said, binary thinking (alone) can no longer keep pace with the complexities inherent in emerging technologies and innovation per se. Hence, by embracing conceptual contradictions in oxymora, comparative law can also transform and help to pave the way for

176 See George Lakoff and Mark Johnson *Metaphors We Live By* (The University of Chicago Press, Chicago, 1980) at 3.

177 See Mark L. Johnson “Mind, Metaphor, Law” (2007) 58(3) Mercer L Rev 845 at 845.

another cognitive revolution, around 70,000 years after *homo sapiens* first acquired new ways of thinking and communicating.¹⁷⁸ The next cognitive revolution will transform not only the way we think but also how we perceive (which further affects the way we think), sense and, ultimately, decide and act. The ensuing cognitive amendments to our mind may enhance our synaesthetic experiences and, one distant day, even prove that time itself is a paradoxical illusion, an oxymoron named "spacetime continuum", which may "shrink" the perception of time and condense it into an "eternal moment".¹⁷⁹

Until then, comparative lawyers can recognise and use the "oxymora by which we live", and establish themselves as champions of "global connectivity" in both cognitive and legal terms, formulating multidisciplinary approaches towards the unity of science and the emergence of a global legal order. If novel technologies cause harm to physical and mental health, comparative lawyers, acting as "social doctors", can cure the social disease.¹⁸⁰ If algorithms secretly control money, information and life, comparative lawyers will act as software programmers who write codes to bring the contents of the many black boxes into the light. If new technologies disrupt public services, state institutions and the legal system, comparative lawyers must act as "the chief architects of our legal, political, and economic order".¹⁸¹ Lawyers, and particularly comparative lawyers, must therefore build bridges and not erect walls, and they must assist in making the governance of the globe sustainable, inclusive and just, not merely by predicting but also by helping to *create and legislate the future itself!*

178 See Yuval Noah Harari *Homo Sapiens: A Brief History of Mankind* (HarperCollins, London, 2015) at 3 and 21.

179 See also Gert ten Hoopen and others "Auditory Isochrony: Time Shrinking and Temporal Patterns" (1995) 24 *Perception* 577 at 577.

180 Pierre Lepaulle "The Function of Comparative Law with a Critique of Sociological Jurisprudence" (1922) 35(7) *Harv L Rev* 838 at 838.

181 Lon L Fuller "On Teaching Law" (1950) 3(1) *Stan L Rev* 35 at 37.

