FOREWORD

Code vs Code emerges from a critical dialogue at the intersection of law, technology, and society.

As director of the DesCartes Program, I am mindful of the growing urgency of examining how digital technologies reshape our legal and regulatory landscapes.

The DesCartes Program was established to foster interdisciplinary research on hybrid artificial intelligence (AI), which combines existing knowledge with data-driven approaches, bringing together researchers from France and Singapore to address questions that neither computer science nor the social sciences can answer alone.

This book exemplifies precisely that interdisciplinary mission. The fundamental tension it explores – between legal code as democratic expression and software code as technical governance – lies at the heart of our contemporary digital condition.

The book features substantive contributions from nine members of our research community, spanning diverse perspectives on artificial intelligence, blockchain technology, and quantum computing. These contributions reflect the breadth of expertise within DesCartes: from analysing public opinion on AI in the technoscientific sphere, to examining trust dynamics in foundation models, to exploring the evolution of Lessig's regulatory framework 25 years after *Code and Other Laws of Cyberspace*.[1] The chapters on blockchain governance, metaverse intellectual property, intellectual property protection for quantum computing, and strategic independence in quantum technologies demonstrate how our researchers are grappling with the most pressing regulatory challenges of our time.

More generally, the threefold framework proposed by the editors – domination, transformation, and confrontation – provides a particularly productive lens for understanding these dynamics. Will law retain its regulatory primacy over algorithmic governance? Can computational code enhance democratic lawmaking? How should intellectual property regimes

[1] L. Lessig, *Code and Other Laws of Cyberspace,* New York, Basic Books, 1999; see also L. Lessig, *Code: Version 2.0,* New York, Basic Books, 2006.

balance openness and protection for emerging technologies? These are not merely academic questions but fundamental challenges for democratic societies navigating technological change.

The volume is also distinguished by its commitment to genuine interdisciplinarity. Too often, conversations about technology regulation occur in disciplinary silos, with lawyers speaking past computer scientists and social scientists left on the margins. The authors assembled here refuse this compartmentalisation.

The international dimension of this collaboration is equally significant. By bringing together scholars from Europe, Asia, and North America, the volume recognises that questions of technological governance cannot be answered within national boundaries. The development of AI, blockchain, and quantum technologies is inherently global, and regulatory responses must be informed by diverse legal traditions and social contexts.

As we stand at this critical juncture – where algorithmic decision-making increasingly shapes human life, where distributed ledgers promise new forms of governance, and where quantum computing threatens to disrupt cryptographic foundations – the questions raised in this volume become ever more urgent. The relationship between code and Code will define not only the effectiveness of our regulatory systems but also the very possibility of democratic governance in the digital age.

Professor Francisco Chinesta

DesCartes Program director

PRESENTATION

Amélie Favreau and Burkhard Schafer

SECTION I
INTRODUCTION

First, there was the 'law of code' – the application of traditional legal norms enacted by parliament to regulate new and emerging technologies. The shortcomings and dissatisfaction with this approach soon gave rise to the idea of 'Code is Law', a catchphrase in the age of the digitalisation that expressed the idea that through the internet's computational infrastructure, code regulates, constrains and facilitates online behaviour. Programmatically, it also highlighted that a form of regulation that drew its legitimacy from the democratic process was in danger of being replaced by a mode of governance where unappointed and often unaccountable software developers became *de facto* legislators. Even more recently, and depending on one's position either acerbating or mitigating this danger, we have seen the emergence of a discussion on Law (enacted in the form of) computer Code, or Law as Code, changing the way we think about the legislative process and the regulation of technology. If we combine these three ideas, we get closer and closer to a formal equivalence between capital letter 'Codes' of law, and lower case letter software code. Provocatively styled in the form of a divorce proceeding, this volume therefore asks questions about the relation and delineation between traditional legal codes and software code as modes of regulation.

This debate has gained new urgency in the light of emerging digital technologies such as artificial intelligence, blockchain and, in the future, quantum technologies. Studied together and separately, these emerging or disruptive technologies operated by computer code have an impact on codifying, applying, and enforcing the law. The term 'versus' underlines a confrontation between the codes (or rules) of the computer scientist and the lawyer and also a domination or a transformation. These three meanings will be mobilised during the volume. Indeed, if the law can be an instrument of regulation of emerging technologies, it can also be the object of these digital stakes.

SECTION II
'CODE VS CODE': A DOMINATION?

The question raised is the adaptation of our legal rules to supervise the uses of emerging digital technologies. Artificial intelligence questions the modes of production of knowledge or creativity, quantum technologies are likely to accelerate such processes, and the registry and traceability functions of the blockchain are increasingly used as a tool for the administration of evidence. Can the law cope with this and reassert its priority? Should we revisit our legal categories and update them? Or is the law already prepared to respond to digitalisation?

SECTION III
'CODE VS CODE': A TRANSFORMATION?

Law does not just control technology; our understanding of what law is can also be influenced, challenged, and changed by technology. Computer code has the potential for optimising traditional law-centric forms of governance, for instance by mobilising predictive tools based on artificial intelligence and trained on past precedents, or smart contracts deployed on the blockchain. What can AI, blockchain, and quantum computing do to change the law? Can this code-ification or 'code as law' replace the traditional ways of enacting, applying, and enforcing the law?

SECTION IV
'CODE VS CODE': A CONFRONTATION?

The question of access to and understanding the algorithms is the underlying issue of this stream, and with that also in particular the role of intellectual property (IP) law to govern technologies. AI, blockchain, and quantum technologies have different degrees of maturity. There is an inherent tension between different legal regimes: those that limit access and reduce openness and transparency of these technologies (IP law), and those that, like the proposed EU AI Act (or, more traditionally, competition law), try to force algorithms into the open. This stream of the colloquium will question the opening or closing of these technologies, especially through property rights. Is it according to the degree of maturity? The social uses? Society's acceptance of these technologies? These three possible relations between legal code and software code may not exhaust the space of possibilities, and other relations may be possible. Should we imagine other models of governance for 'Code and code' in 'peaceful coexistence'?

Such a reflection can only take place in a broad interdisciplinary context. The colloquium and the book are therefore not only for researchers in law or computer scientists, but also for researchers in philosophy, sociology, and information and communication in order to better understand and anticipate the major human and societal issues. From three continents (Europe, Asia, and Canada), researchers in Humanities and Social Sciences and Computer Technology will be gathered in that book.

This publication would not have been possible without the support of the DesCartes Program. The DesCartes Program was established to foster interdisciplinary research on hybrid AI, bringing together researchers from France and Singapore to address questions that neither computer science nor social sciences can answer alone. This book exemplifies precisely that interdisciplinary mission. The fundamental tension it explores – between legal code as democratic expression and software code as technical governance – lies at the heart of our contemporary digital condition.

This publication also provides an opportunity to once again thank all the speakers, the session chairs for artificial intelligence, Maëliss Vincent-Moreau (lawyer at MVM in Paris); for blockchain, Élise Guilhaudis (lawyer at Numetik in Grenoble) and Christine Hennebert (Senior Research Engineer and Expert at the Atomic Energy and Alternative Energies Commission (CEA)); and for quantum technology, Robert Whitney (physicist, researcher at the French National Centre for Scientific Research (CNRS)) and Maud Vinet (senior scientist at the CNRS, and co-founder and CEO of Quobly). Thank you for travelling across Singapore, Canada, the United Kingdom, France, and even simply across the street – they honoured us with their presence and their written contributions.

This publication is the result of a collaboration with Anna Company, PhD student in Intellectual Property and New Technologies at Université Grenoble Alpes. The involvement of students in our research work is fully part of our mission of knowledge transmission and introduction to scientific methodology. We wish to express our gratitude to her for her contribution to this project.

We also extend our appreciation to the institutional and professional partners who supported the conference and its publication: Université Grenoble Alpes, the Centre de Recherches Juridiques (CRJ), the DesCartes Program, CNRS@Create, ANR TIQuA, the Université de Sherbrooke, SFR INNOVACS, GDR Internet, IA et société, Numetik Avocats, and MVM Avocats.

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