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Socio-legal study of technology: A norms and values approach to hacking and encryption law and policy

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ABSTRACT

In light of the dissolution of the traditional boundaries separating the fields of law, technology and society, this article puts forward an interdisciplinary norms and values approach to the study of technology law. It explains the core concepts of norms and values and their significance to legal research and other disciplines. The article further sets out the qualitative, inductive and interpretivist methodology and methods necessitated by this socio-legal approach. It then applies the norms and values approach to the cases of hacking and encryption to illustrate its substantial benefits and contributions to the development of technology law and policy.

1. Intersection of law, technology and society

In an increasingly computerised, digitised and connected world, there is much greater overlap and intersection between law, technology and society. Traditional borders separating many legal, technical and social domains have become blurred or disappeared due to the internet and other information and communications technologies. A whole host of legal issues and techno-social problems have resulted from the dissolution of previously existing boundaries between analogue and digital,[1] physical versus virtual,[2] territorial vs cyber,[3] human as opposed to machine,[4] public versus private,[5] professional vs amateur,[6] commercial in contrast to non-commercial,[7] and national and global.[8]

It is evident that conventional or exclusively legal approaches are limited or ill-suited to deal with multifaceted problems brought about by these changes. As the distinctions amongst many common and critical areas of human activity have been upended, it seems appropriate that a historically siloed academic discipline such as law should also be opened up or taken apart.[9] This is so because it is not enough to merely study the impact of technology on law and society or how law can influence technology and society. More crucially, it is necessary to comprehend how law, technology and society relate to and interact with each other. In order to properly deal with the full complexity of the intersecting legal, technical and social realities that it seeks to examine, the field of technology law must similarly interface and merge with other disciplines and research areas. This would require the concepts, methodologies and methods of technology law to be disassembled, reconfigured

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[1] See Jessica Litman, *Digital Copyright* (Prometheus Books 2006); see also Peter K Yu, "The Escalating Copyright Wars" (2003-2004) 32 Hofstra Law Review 907.

[2] Hal Abelson, Ken Ledeen and Harry Lewis, *Blown to Bits: Your Life, Liberty, and Happiness after the Digital Explosion* [1]; see also Berin Szoka and Adam Marcus (eds), *The Next Digital Decade: Essays on the Future of the Internet* (TechFreedom 2010).

[3] See Andrew D Murray, *The Regulation of Cyberspace: Control in the Online Environment* (Routledge-Cavendish 2007); see also Lawrence Lessig, *Code: Version 2.0* (Basic Books 2006).

[4] See Susan W Brenner, *Law in an Era of "Smart" Technology* (Oxford University Press 2007); see also Christopher Steiner: *Automate This: How Algorithms Came to Rule Our World* (Portfolio 2012).

[5] See James Boyle, *The Public Domain: Enclosing the Commons of the Mind* (Yale University Press 2008); see also Lawrence Lessig, *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (The Penguin Press 2004).

[6] See Julie E Cohen, *Configuring the Networked Self: Law, Code, and the Play of Everyday Practice* (Yale University Press 2012); see also Lawrence Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (Bloomsbury 2008); see also Eric S Raymond, *The Cathedral and the Bazaar* (Feedbooks 2000).

[7] See Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (Yale University Press 2006); see also Jonathan Zittrain, *The Future of the Internet And How to Stop It* (Yale University Press 2008).

[8] See Christopher T Marsden (ed), *Regulating the Global Information Society* (Routledge 2000); see also Nicolas P Suzor, *Lawless: The Secret Rules That Govern Our Digital Lives* (Cambridge University Press 2019).

[9] See John Griffiths "What is Legal Pluralism?" (1986) 24 Journal of Legal Pluralism & Unofficial Law 1, 3-4.

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and remade.

The central aim of this article is to set out, explain and apply a norms and values approach to technology law. It does so by explaining the fundamental concepts, methodology and methods that comprise this approach. It discusses the core concepts of norms and values and the hybrid methodology and methods that can be adopted. The normative and axiological approach is grounded in the fields of technology law, science and technology studies (STS), and socio-legal studies.[10] Such a cross-disciplinary, empirical and socially-orientated perspective on technology law is significant since research methods that underpin socio-legal studies, namely conducting primary data collection about individuals or social groups located at specific research sites, are not usually utilised in doctrinal legal research.[11] Moreover, concepts drawn from STS such as the mutual shaping of technology and society have not yet been applied in technology law in an integrated manner.

The socio-legal study of technology includes yet goes beyond the traditional focus of doctrinal research on the laws of nation-states, and further delves into the technical and social dimensions of the subject technology or technical activity. It is worth noting that the kind of axiology or study of values put forward in this article is less concerned with purely philosophical or abstract ruminations about ethics, but strives to identify and examine norms and values in actual or everyday practice and experiences through the use of empirical methods and data. Taking account of the values of the research subjects, the researcher, and their social worlds is crucial to social science research.[12] In STS, two of the key premises and preoccupations of the discipline are the recognition that technologies have values and that values are central to the production of science and technology.[13]

The article is structured into five parts. After this introduction, Part 2 presents the concepts of the normative and axiological approach to technology law. It discusses the meanings and importance of norms and values to legal research and the broader study of law, technology and society. Part 3 then discusses the underlying methodology. In Part 4, the norms and values approach is applied in the cases of hacking and encryption. It explains the methods used to collect and analyse data, as well as the benefits and outcomes of this interdisciplinary approach. The article ends with a brief conclusion and reflection on the significance of a norms and values approach to technology law and policy.

2. Concepts

Norms and values are the primary conceptual and empirical foci of the socio-legal approach to technology law. Norms and values are admittedly complicated and contested concepts, and precise definitions of these terms are much discussed within and across scholarly disciplines.[14] It is not the objective of this article to resolve these seemingly intractable theoretical and definitional debates.[15] While norms and values can be defined and described in various ways,[16] a social sciences-based conceptualisation of these two concepts is fitting for a socio-legal study of technology because the principal foci are the socio-technical actors, fields and behaviours involved.[17]

2.1. Norms

A norm or social norm has been described as "generally accepted, sanctioned prescriptions for, or prohibitions against, others' behaviour…, i.e. what others *ought* to do . . . *or else*".[18] It is considered "a statement made by a number of members of a group, not necessarily by all of them, that the members *ought to* behave in a certain way in certain circumstances".[19] It is also construed as "a belief shared to some extent by members of a social unit as to what conduct *ought to be* in particular situations or circumstances".[20] Norms have also been described as "being (a) normative statements that (b) are socially reproduced and (c) represent the individual's perception of the expectations surrounding their own behaviour".[21] It can also be further characterised as:

> a rule which, over a period of time, proves binding on the overt behavior of each individual in an aggregate of two or more individuals. It is marked by the following characteristics: (1) Being a rule, it has content known to at least one member of the social aggregate. (2) Being a binding rule, it regulates the behavior of any given individual in the social aggregate by virtue of (a) his [or her] having internalized the rule; (b) external sanctions in support of the rule applied to him [or her] by one or more other individuals in the social aggregate; (c) external sanctions in support of the rule applied to him [or her] by an authority outside the social aggregate; or any combination of these circumstances.[22]

The above underscores the key attributes of a norm: it takes the form of a rule; possesses an element of regularity; is considered binding or carries a sense of oughtness; is based on shared expectations and evaluations; influences behaviour; has internal and external dimensions; and involves sanctions or inducements of some kind.[23] A norm therefore involves "(1) a collective evaluation of behavior in terms of what it *ought*

[10] Maggie Walter (ed), *Social Research Methods* (Oxford University Press 2013) 13; see Samuel L Hart, "Axiology – Theory of Values" (1971) 32 Philosophy and Phenomenological Research 29.

[11] Reza Banakar and Max Travers (eds), *Theory and Method in Socio-Legal Research* (Hart Publishing 2005) 18.

[12] Maggie Walter, *Social Research Methods* 13.

[13] See Cory Knobel and Geoffrey C Bowker, "Values in Design" 54 Communications of the ACM 26; Batya Friedman and Helen Nissenbaum, "Bias in Computer Systems" (1996) 14 ACM Transactions on Information Systems 330, 335.

[14] Jack P Gibbs, *Norms, Deviance, and Social Control: Conceptual Matters* (Elsevier 1981) 9 and 19; Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" in T Parsons and EA Shils (eds), *Toward a General Theory of Action* (Harper Torchbooks 1951) 394; Michael Hechter and Karl-Dieter Opp (eds), *Social Norms* (The Russel Sage Foundation 2001) xiii, 396 and 402; Richard H McAdams and Eric B Rasmusen, "Norms and the Law" in AM Polinsky and S Shavell (eds), *Handbook of Law and Economics, Volume 2* (Elsevier 2007) 1576; Hakan Hyden, *Sociology of Law as the Science of Norms* (Routledge 2022) 91.

[15] Jack Gibbs, *Norms, Deviance, and Social Control* x and 9; James L Spates, "The Sociology of Values" (1983) 9 Annual Review of Sociology 27, 35-36; Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" (1992) 10 Sociological Theory 214, 217-219.

[16] Jack Gibbs, "Norms: The Problem of Definition and Classification" (1965) 70 American Journal of Sociology 586, 587.

[17] See Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" (2000) 34 Law & Society Review 157, 158; Richard McAdams and Eric Rasmusen, "Norms and the Law" 1576.

[18] Richard Morris, "A typology of norms" 610.

[19] Jack Gibbs, *Norms, Deviance, and Social Control* 8 (emphasis added); see KD Opp "Norms" in *International Encyclopedia of the Social & Behavioral Sciences* (Elsevier Science 2001) 10714.

[20] Jack Gibbs, *Norms, Deviance, and Social Control* 7.

[21] Mans Svensson, "Norms in Law and Society: Towards a Definition of the Socio-Legal Concept of Norms" in M Baier (ed) *Social and Legal Norms* [2] 47; see also Hakan Hyden, *Sociology of Law as the Science of Norms* 107-109.

[22] Bruce P Dohrenwend, "Egoism, Altruism, Anomie, and Fatalism: A Conceptual Analysis of Durkheim's Types" (1959) 24 American Sociological Review 466, 470.

[23] Bruce Dohrenwend, "A Conceptual Analysis of Durkheim's Types" 470 and 472; KD Opp "Norms" 10714; Jack Gibbs, *Norms, Deviance, and Social Control* 3; Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 167; Michael Hechter and Karl-Dieter Opp, *Social Norms* xi, 403 and 404; Christine Horne, "Sociological Perspectives on the Emergence of Social Norms" in M Hechter and KD Opp (eds), *Social Norms* (The Russel Sage Foundation 2001) 5; Michael Baurmann and others, *Norms and Values: The Role of Social Norms as Instruments of Value Realisation* (Nomos 2010) 9; Hakan Hyden, *Sociology of Law as the Science of Norms* 95.

to be; (2) a collective expectation as to what behavior *will be*; and/or (3) particular *reactions* to behavior, including attempts to apply sanctions or otherwise induce a particular kind of conduct".[24] In this article, the term norm is used as a shorthand for social norms and these terms are synonymous and are used interchangeably.

In terms of classification, there are three main types of social norms: "mores, customs and laws".[25] Mores are "collective beliefs as to how persons ought to behave … they relate to certain kinds of conduct which are deemed so important to social welfare that they are defended overtly",[26] while customs are "collective expectations as to what persons actually do and not beliefs as to what they should do".[27] It is important to recognise that from the viewpoint of the social sciences, law is held to be "a type of norm" and a subset within the broad category of social norms.[28] While law resists a precise and uncontested definition even in the field of jurisprudence and legal theory, law is generally understood in sociology in this way: "An order will be called *law* if it is externally guaranteed by the probability that coercion (physical or psychological), to bring about conformity or avenge violation, will be applied by a *staff* of people holding themselves specifically ready for that purpose".[29] As Gibbs explains, "A law is enforced by persons in special statuses through means that may include the use of force with a low probability of retaliation, a condition that does not characterize customs, mores".[30] The relation between social norms and law can be described in terms of their varying degrees of formality, importance, certainty and generality.[31] As social norms, laws would be those that are more formal, serious, coercive, forcefully applied, and comprehensive in their application.

While it may be said that laws are merely more formal social norms that are enacted and enforced in a special manner, it is still necessary to treat law as discrete from social norms.[32] According to Hechter and Opp, laws and social norms can be distinguished in the following manner:

> Although the law, too, relies on norms, [laws] are different from social norms. [Laws] are created by design – usually through some kind of deliberative process, precisely specified in written texts, linked to particular sanctions, and enforced by a specialized bureaucracy. Social norms, by contrast, often are spontaneous rather than deliberately planned (hence, of uncertain origin), unwritten (hence, their content and rules for application are often imprecise), and enforced informally (although the resulting sanctions can sometimes be a matter of life and death)".[33]

In the field of technology law, Lawrence Lessig's much cited and applied theory of the four modalities of regulation similarly treats law and social norms as separate yet interconnected concepts.[34] Keeping law distinct is important since, even in a globalising and exceedingly networked world, law remains a powerful and vital source and basis for rules, sanctions and inducements that impact and shape human action and social behaviour.[35] As such, rather than conflating law and social norms, being cognisant of their similarities, differences and interactions can help provide "conceptual clarity" as well as produce actionable insights for both legal and social research.[36] Scholars on both sides agree that the relationship and interactions between social norms and laws are "complexly intertwined".[37] Etzioni explains one such relation between laws and social norms that may have a valuable import for public authorities attempting to maintain social order or influence social behaviour:

> it is widely held that strong social norms reduce the burden of law enforcement; that laws supported by social norms are likely to be significantly more enforceable; and that laws that are formulated in ways that are congruent with social norms are much more likely to be enacted than laws that offend such norms.[38]

2.2. Values

Values are intrinsically related to norms, but they remain discrete concepts. A value has been defined as "*a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action*".[39] It has also been described as "an enduring prescriptive or proscriptive belief that a specific mode of behavior or end-state of existence is preferred to an opposite or converse mode of behavior or end-state".[40]

[24] Jack Gibbs, "Norms: The problem of definition and classification" 589 and 594.

[25] Jack Gibbs, *Norms, Deviance, and Social Control* 17; but see Jack Gibbs, "Norms: The Problem of Definition and Classification" 587-588 and 591-592; and Richard Morris, "A Typology of Norms" (1956) 21 American Sociological Review 610, 610-612 (who provides a more extensive list that includes "folkways, mores, customary law, enacted law, custom" as part of the overall typology of norms).

[26] Jack Gibbs, "Norms: The Problem of Definition and Classification" 592-593; see also Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 388.

[27] Jack Gibbs, "Norms: The Problem of Definition and Classification" 592-593.

[28] Jack Gibbs, "The Sociology of Law and Normative Phenomena" (1966) 31 American Sociological Review 315, 315; KD Opp "Norms" 10715; Richard Posner, "Social Norms and the Law" (1997) 87 The American Economic Review 365, 365.

[29] Jack Gibbs, "Norms: The Problem of Definition and Classification" 590 (citing Max Weber); see also KD Opp "Norms" 10715.

[30] Jack Gibbs, "The Sociology of Law and Normative Phenomena" 316.

[31] Michael Anthony C Dizon, "Rules of a networked society: Here, there and everywhere" in R Leenes and E Kosta (eds), *Bridging Distances in Technology and Regulation* (Wolf Legal Publishers 2013) 87.

[32] DJ Galligan, *Law in Modern Society* (Oxford University Press 2007) 188; Jane Ruby, "The Origin of Scientific 'Law'" (1986) 47 Journal of the History of Ideas 341; see Michael Dizon, "Rules of a networked society" 84-87 (for a more detailed explanation of the relationship between law and norms).

[33] Michael Hechter and Karl-Dieter Opp "Social Norms" xi.

[34] Lawrence Lessig, *Code: Version 2.0* 123.

[35] Sally Falk Moore, "Law and Social Change: The Semi-Autonomous Social Field as an Appropriate Subject of Study" (1973) 7 Law & Society Review 719, 745; see Anne Griffith, "Legal Pluralism" in R Banakar and M Travers (eds), *An Introduction to Law and Social Theory* (Hart Publishing 2002) 301-302; see Richard McAdams and Eric Rasmusen, "Norms and the Law" 1589, 1593, 1596 and 1609 (on the law's ability to change, improve or work better than norms in certain cases); see Robert Cooter, "Normative Failure Theory of Law" (1997) 82 Cornell Law Review 947, 948, 949 and 979; see FA Hayek, *Law, Legislation and Liberty: Volume I Rules and Order* (The University of Chicago Press 1973) 88.

[36] Jack Gibbs, "The Sociology of Law and Normative Phenomena" 316.

[37] Robert C Ellickson, "The Evolution of Social Norms: A Perspective from the Legal Academy" (1999) Yale Law School, Program for Studies in Law, Economics and Public Policy, Working Paper 230, 62; see also Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 159; see also Jack Gibbs, "The Sociology of Law and Normative Phenomena" 322; see also Richard A Posner, "Social Norms and the Law: An Economic Approach" (1997) 87 The American Economic Review 365, 365.

[38] Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 159.

[39] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 395; see also Milton Rokeach, *The Nature of Human Values* (The Free Press 1973) 9; see also Richard Morris, "A Typology of Norms" 610; see also Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" (2004) 30 Annual Review of Sociology 359, 362; see also James Spates, "The Sociology of Values" 30.

[40] Milton Rokeach, *The Nature of Human Values* 5 and 25; see also Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" 362; but see Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 403 (who states that "the distinction between *ends* and *means* is somewhat transitory, depending upon time perspective"); see also Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" 366.

The "desirable" as opposed to "the desired" is a key notion since "[t]he desirable is what it is felt or thought proper to want. It is what an actor or group of actors desire – and *believe* they 'ought' or 'should' desire – for the individual or a plurality of individuals".[41] As a standard of action, evaluation, and rationalisation, a value guides conduct and determines an individual's or group's actions.[42] Based on existing literature, the five common features of values are "(a) concepts or beliefs, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance".[43]

There are two kinds of values: instrumental values, which pertain to modes of conduct; and terminal values, which refer to end-states of existence.[44] Examples of instrumental values in a study of American values include honesty, independence, and ambition, whereas equality, freedom and security are terminal values.[45] With regard to their operation, instrumental and terminal values "represent two separate yet functionally interconnected systems, wherein all the values concerning modes of behavior are instrumental to the attainment of all the values concerning end-states".[46] It should be noted though that there are scholars who hold the view that there is no distinction between instrumental and terminal values since "the same values can express motivations for both means and ends".[47]

Values are distinguishable from norms since "ideas of what is desirable [are] distinct from shared ideas of what others ought to do, with sanctions attached".[48] While values can be "personal and internal", norms are consensual and interpersonal.[49] As such, "[v]alues can be held by a single individual; norms cannot. Norms must be shared prescriptions and apply to others, by definition".[50] Furthermore, "[v]alues have only a subject – the believer – while norms have both subject and objects – those who set the prescription, and those to whom it applies".[51] Importantly, norms involve sanctions and incentives but values per se do not have to.[52]

Despite these distinctions, social norms and values are closely related to each other.[53] Giddens, considers norms as "[r]ules of behaviour that reflect or embody a culture's *values*, either prescribing a given type of behaviour, or forbidding it".[54] Gibbs similarly states that "[n]orms are based on cultural *values*".[55] The very notion of norms "implies the existence of shared values",[56] and values equally involve normative propositions.[57] . Given the connection between the two, it makes sense to study them both individually and together.[58]

2.3. Norms and values in legal and other research

Norms and values have been the subject of legal scholarship (mainly in the form of law and society research), but they were only "rediscovered" in a big way by mostly law and economics scholars in the 1990s.[59] Placing greater attention and emphasis on these two concepts has been appealing to legal scholars in general since laws, norms and values all concern and involve social relations and social order.[60] All three correlative concepts intrinsically "deal with normative phenomena, [whether] partially or wholly".[61] In addition to incorporating norms and values into their conceptual and analytical frameworks, there have been increasing calls for legal scholars themselves to "undertake primary research on norms".[62] More than any other time, "there is a now greater appreciation of the need for empirical research to verify a law's influence" on norms, and vice versa.[63] Ellickson's book *Order without Law*, which is based on the author's own empirical study of cattle ranchers and farm owners in the United States and their private norms on dispute resolution concerning animal trespass and damage, is a prime example of this type of norms-centred and empirically-grounded research conducted by legal scholars.[64]

It is worth noting that norms and values are central concepts not just in law and the social sciences but in many other academic fields as well.[65] These two concepts are thought of as being at the "crossroad of a large number of scientific disciplines".[66] Indeed, much of human activity and behaviour is determined or can be explained in relation to norms,[67] and values are considered "the main dependent variable in the study of culture, society, and personality, and the main independent variable in the study of social attitudes and behavior".[68] Both serve as "guides and determinants" of individual's and groups' worldviews and behaviours.[69] Kluckhohn notes the relevance of these two concepts to inter- and multidisciplinary research: "[t]he concept of 'value' supplies a point of convergence for the various specialized social sciences, and is a key concept for the integration with studies in the humanities. Value is potentially a bridging concept which can link together many diverse specialized studies".[70] The notion that norms and "values affect the

[41] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 396.
[42] Milton Rokeach, *The Nature of Human Values* 13-14; Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" 379.
[43] Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" 362.
[44] Milton Rokeach, *The Nature of Human Values* 7-8; Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 216.
[45] Milton Rokeach, *The Nature of Human Values* 28.
[46] Milton Rokeach, *The Nature of Human Values* 12.
[47] Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept".
[48] Richard Morris, "A Typology of Norms" 611.
[49] Milton Rokeach, *The Nature of Human Values* 19.
[50] Richard Morris, "A Typology of Norms" 610.
[51] Richard Morris, "A Typology of Norms" 610.
[52] Richard Morris, "A Typology of Norms" 610; Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 215.
[53] Gary Fine, "Enacting norms" 161; Christine Horne, "Sociological perspectives on the emergence of social norms" 4.; Michael Baurmann and others, *Norms and Values* 7 and 10.
[54] Anthony Giddens, *Sociology* 1127 (emphasis added); see also Hakan Hyden, *Sociology of Law as the Science of Norms* 94.
[55] Jack Gibbs, "Norms: The problem of definition and classification" 586.
[56] Jack Gibbs, "Norms: The Problem of Definition and Classification" 589.
[57] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 390.
[58] See Steven Hitlin and Jane Piliavin, "Values: Reviving a dormant concept" 359.
[59] Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 157-158; see also Michael Hechter and Karl-Dieter Opp, *Social Norms* xii; Robert Ellickson, "The Evolution of Social Norms" 35; see also Richard McAdams and Eric Rasmusen, "Norms and the Law" 1609.
[60] Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 159; Jack Gibbs, "The Sociology of Law and Normative Phenomena" 315; Jack Gibbs, *Norms, Deviance, and Social Control* 2.
[61] Jack Gibbs, "The Sociology of Law and Normative Phenomena" 315 and 322.
[62] Robert Ellickson, "The Evolution of Social Norms" 63; see also Robert Cooter, "Normative Failure Theory of Law" 949.
[63] Richard McAdams and Eric Rasmusen, "Norms and the Law" 1609
[64] See Robert C Ellickson, *Order Without Law: How Neighbors Settle Disputes* (Harvard University Press 1991); Richard McAdams and Eric Rasmusen, "Norms and the Law" 1589 and 1609.
[65] Jack Gibbs, "Norms: The Problem of Definition and Classification" 594; Milton Rokeach, *The Nature of Human Values* ix; Mans Svensson, "Norms in Law and Society: Towards a Definition of the Socio-Legal Concept of Norms" 46.
[66] Goran Therborn, "Back to Norms! On the Scope and Dynamics of Norms and Normative Action" (2002) 50 Current Sociology 863, 863 and 879.
[67] Jack Gibbs, *Norms, Deviance, and Social Control* 2 and 16.
[68] Milton Rokeach, *The Nature of Human Values* ix and 3.
[69] Milton Rokeach, *The Nature of Human Values* 24.
[70] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 389; Milton Rokeach, *The Nature of Human Values* 3.

shape of technology" is well understood in the field of STS.[71] It is widely accepted, for instance, that "[c]omputer and information systems embody values".[72] Thus, "[m]ore than any other concept", norms and values hold the "promise of being able to unify apparently diverse interests of all the sciences concerned with human behavior".[73] Therefore, focusing on norms and values is critical for conducting the interdisciplinary socio-legal approach espoused in this article.

2.4. Semi-autonomous field

Another crucial concept is the semi-autonomous field. Moore describes a "semi-autonomous social field" as having the ability to "generate rules and customs and symbols internally, but that it is also vulnerable to rules and decisions and other forces emanating from the larger world by which it is surrounded".[74] It has its "own customs and rules and the means of coercing or inducing compliance".[75] For Moore, a "social field is defined and its boundaries identified not by its organization… but by a processual characteristic, the fact that it can generate rules and coerce or induce compliance to them".[76]

According to Bourdieu, "a field is a separate social universe having its own laws of functioning independent of those of politics and the economy".[77] It is "organized around a body of internal protocols and assumptions, characteristic behaviors and self-sustaining values".[78] For Bourdieu, "[t]he social field can be described as a multi-dimensional space of positions such that every actual position can be defined in terms of a multi-dimensional system of coordinates whose values correspond to the values of the different pertinent variables".[79] He further elaborates, "This field is neither a vague social background nor even a *milieu*" but "a veritable social universe where, in accordance with its particular laws, there accumulates a particular form of capital where relations of force of a particular type are exerted. This universe is the place of entirely specific struggles".[80] As a result, "a social field is the site of struggle, of competition for control".[81] It should be noted though that while a social field "has rule-making capacities, and the means to induce or coerce compliance… it is simultaneously set in a larger social matrix".[82]

The semi-autonomous field is appropriate for the socio-legal study of technology since "[i]t draws attention to the connection between the internal workings of an observable social field and its points of articulation with a larger setting".[83] As such, any technology or technical activity may be viewed as involving a semi-autonomous field that has its own norms and values that interact with external laws and society as a whole. From this perspective, the regulation of any technology or technical activity is neither simple nor straightforward because the relevant field is far from being "lawless" or value-free since it is constituted and thickly permeated by its own standards and expectations of the appropriate and desirable. When it comes to a new or emerging technology, there is a tendency amongst law and policymakers to imagine the relevant socio-technical field as akin to a no man's land or untamed frontier that needs to be settled through government intervention. In reality, there is no normative vacuum in these semi-autonomous fields because individuals and groups reside and inhabit these spaces and they have their own internal rules of governance and control.

2.5. Conceptual framework

Norms and values and their relationship with law and technology can be developed into a conceptual framework for the socio-legal study of technology. The foundation of this framework is Lessig's theory of the four modalities of regulation (i.e., law, social norms, the market, and architecture).[84]His-theory already contains the three elements of law, social norms and architecture. However, refining Lessig's theory, social norms can be expanded to include values since they are intimately connected. Furthermore, "technology" can be used in lieu of "architecture" since the former is broader and can encompass the latter. Technology can be understood as the "application of knowledge to production from the material world. Technology involves the creation of … instruments (such as machines) used in human interaction with nature".[85] The term should also be construed more broadly to subsume its corollary, science, and other practices and processes that involve the production and application of technical and scientific knowledge (i.e., both *techne* and *episteme*). With regard to "the market", it is undoubtedly important for certain kinds of technology law research, particularly those involving economics. However, economic rules, phenomena or forces that make up the market are already covered by the existing three elements, especially technology (which includes science), and a separate element for the market may not be necessary. Thus, the three elements of the conceptual framework are law, social norms and values, and technology.

Applying the previously discussed concept of the semi-autonomous field, the three elements of law, social norms and values, and technology can be perceived as being or generating their own fields. The conceptual framework is therefore comprised of three fields: the legal, the technological and the social (see Fig. 1).[86] Each field is distinct, yet they stand intimately close to one another. They possess common margins, which are porous, continuously ebbing and flowing, and always reshaping. These shared borders though are not so much barriers separating the fields as they are areas of contact, interaction and osmosis. These boundary areas are thus crucial sites of mutual shaping and influence between and amongst the fields, including the actors that reside within them. Further, each field can be described in terms of the discrete rules that constitute them. The legal field can be conceived as being made up of laws and legal rules; the technological field consists of technical and scientific theories, principles, rules, codes and techniques on how to produce and apply knowledge; and the social field is

[71] Helen Nissenbaum, "How Computer Systems Embody Values" Computer (March 2001) 120 and 118; see also Trevor Pinch and Wiebe E Bijker, "The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other" (1984) 14 Social Studies of Science 399, 428; see also Sven Dietrich and others "Ethics in data sharing" IEEE Security and Privacy Workshops 2014.

[72] Helen Nissenbaum, "How Computer Systems Embody Values" 120 and 118.

[73] Milton Rokeach, *The Nature of Human Values* 3; see also Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 163.

[74] Sally Falk Moore, "Law and Social Change" 720.

[75] Sally Falk Moore, "Law and Social Change" 721.

[76] Sally Falk Moore, "Law and Social Change" 722.

[77] Pierre Bourdieu, *The Field of Cultural Production: Essays on Art and Literature*, Randal Johnson (ed) (Polity Press 1993) 162.

[78] Richard Terdiman, "Translator's Introduction: The Force of Law: Toward a Sociology of the Juridical Field" (1987) 38 Hastings Law Journal 805, 806.

[79] Pierre Bourdieu, "The social space and the genesis of groups" (1985) 14 Theory and Society 723, 724.

[80] Pierre Bourdieu, *The Field of Cultural Production* 163-164.

[81] Richard Terdiman, "Translator's Introduction: The Force of Law: Toward a Sociology of the Juridical Field" 808.

[82] Sally Falk Moore, "Law and Social Change" 720.

[83] Sally Falk Moore, "Law and Social Change" 742.

[84] Lawrence Lessig, *Code: Version 2.0* 123.

[85] Anthony Giddens, *Sociology* (Polity Press 2009) 1135; see also Bert-Jaap Koops, "Ten dimensions of technology regulation – Finding Your Bearings in the Research Space of an Emerging Discipline" Tilburg University Legal Studies Working Paper Series No. 015/2010 (who defines technology as "the broad range of tools and crafts that people use to change or adapt to their environment") 312.

[86] See Michael Dizon, "Rules of a networked society" (for a more thorough and detailed explanation of a theoretical approach to technology law research).

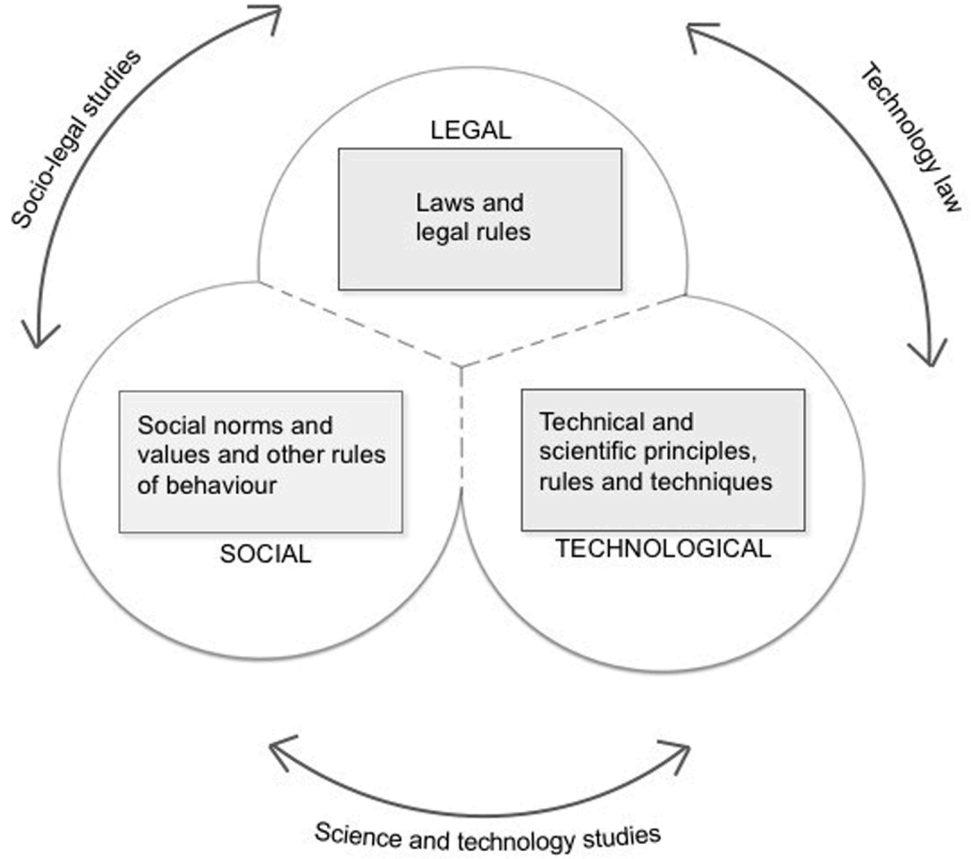

Fig. 1. Conceptual framework.

permeated with social norms and values and other standards and rules of behaviour.[87]

These three semi-autonomous fields are constantly and dynamically interacting with one another. In terms of methodology and methods, the interactions between the legal and the technological are within the purview of technology law, STS can help explain the relations between the technological and the social, and the relationship between the legal and the social can be examined using socio-legal studies. The applicable methodology and methods are discussed in greater detail in Parts 3 and 4.

3. Methodology

3.1. Interdisciplinary

In order to examine the legal, technological and social fields associated with a specific technology or technical activity, it is useful to adopt an interdisciplinary methodology to technology law. A similar "socio-technical legal" approach has been put forward to deal with the problem of regulating cyberspace.[88] However, the emerging "socio-legal turn" in technology law can still be advanced through the application of a hybrid approach that combines technology law, STS and socio-legal studies. It may be said that the propounded methodology is doubly interdisciplinary since these three academic fields by themselves involve interdisciplinary research.

The social and legal fields can be examined using socio-legal studies. Socio-legal studies has a more open and inclusive attitude to the theories and methods that can be used in legal research. According to the Socio-Legal Studies Association's (SLSA) Statement of Principles of Ethical Research Practice, "Socio-legal studies embraces disciplines and subjects concerned with law as a social institution, with the social effects of law, legal processes, institutions and services and with the influence of social, political and economic factors on the law and legal institutions".[89] It is interdisciplinary or multidisciplinary by nature and covers "a range of theoretical perspectives and a wide variety of empirical research and methodologies".[90] It normally requires conducting fieldwork about a particular social group or actors located at a specific research site. One of its main purposes is to "produce socially-informed research about law".[91] In the context of this article, socio-legal studies can be understood as *legal research that is informed by social science theories and methodologies and grounded in empirical data*.[92]

With respect to the social and technological fields, it is apt to draw on STS. From the perspective of STS, technologies are not products created in a vacuum but are the result of the interplay between various cultural, political and socio-economic values and decisions.[93] Following the "social constructivist view of technology" that perceives technology and science as "both socially constructed cultures and bring to bear whatever cultural resources are appropriate for the purposes at hand",[94] it is

[87] See Michael Dizon, "Rules of a networked society" 84-85.
[88] Andrew Murray, *The Regulation of Cyberspace* 37.
[89] Socio-Legal Studies Association, "Statement of Principles of Ethical Research Practice" (January 2009).
[90] Socio-Legal Studies Association, "Statement of Principles of Ethical Research Practice"; Reza Banakar and Max Travers, *Theory and Method in Socio-Legal Research* 1.
[91] Reza Banakar and Max Travers, *Theory and Method in Socio-Legal Research* 2.
[92] See Reza Banakar and Max Travers, *Theory and Method in Socio-Legal Research* 3.
[93] Jonathan Zittrain, *The Future of the Internet* 20.
[94] Trevor Pinch and Wiebe Bijker, "The Social Construction of Facts and Artefacts" 404.

evident that technology is not neutral. It is a product of different contexts and social forces. This is an important point to bear in mind especially in relation to technical actors or groups who often claim that they are engaged in purely technical or scientific matters and their technology are value-neutral. A social constructivist view shows that this is not the case. Despite their protestations to the contrary, technical actors and their technologies and technical activities are "normatively full" and value-laden.[95] STS also offers a wealth of literature on how technology and society mutually shape and co-produce each other.[96] STS is particularly relevant to the norms and values approach since technologies also embody and support specific norms and values.

Technology law is a specialised area of legal studies that deals with the legal and technological fields. Technology law has typically focused on the intersection between technology and formal laws and policies such as legislative enactments, administrative rules, case law and judicial rulings, executive issuances, and acts of co-regulation that concern or relate to the development, access to and use of technologies. Incorporating socio-legal studies and STS can help broaden and deepen the subjects and methods used in technology law. Having an interdisciplinary approach means that the focus is not limited to the conflicts and interactions between law and technology, but also considers multiple state and non-state actors, semi-autonomous fields, and their corresponding norms and values.

Norms and values are exceedingly pertinent to technology law. Laws are unquestionably normative and value-laden. They manifestly enact and express prescriptive rules and normative statements about the acceptable and the desirable.[97] In this sense, doctrinal legal research is fundamentally concerned with normative matters and issues. But, while traditional legal research basically entails the identification, interpretation or application of legal principles and rules to specific facts and cases to produce legally authoritative judgments or opinions,[98] a normative and axiological approach includes but also goes beyond conventional doctrinal analysis. In examining the laws concerning a specific technology or technical actor, considerable effort and attention are devoted to identifying and elucidating the explicit and implicit norms and values embodied in these laws. Some STS scholars undertake "public value mapping" in order to evaluate the social impact and outcomes of science and technology policies.[99] A vital part of public value mapping is searching for, identifying and examining the relations between values in a wide range of legal and documentary sources such as laws and legislative histories, policies and policy statements, government strategic plans and documents, pertinent academic literature, and public discourse and debates on the subject.[100] Public value mapping integrates doctrinal legal research with qualitative content analysis of the relevant laws, policies, regulations, rulings and other legal statements and actions. This is done with a specific view to identifying the normative statements and rules contained in these laws and legal actions and their explicit and implicit value positions and commitments. The actions and behaviours of state actors and public authorities need to be considered in order to more fully analyse and contextualise the norms and values found in these laws and policies. The results can then be compared or contrasted with the norms and values of the relevant technology or technical actor.

A normative and axiological approach is particularly geared towards and framed according to the norms and values of the subject technology and the worldviews of the relevant technical actor vis-à-vis the law. For example, the laws relating to hacking can be examined and assessed based on the specific subject positions and unique perspectives of hackers. Being able to see and evaluate the law "through their eyes" is an invaluable aspect of the interdisciplinary approach espoused in this article because it reveals how the internal norms and values of technical actors and their technologies interact with and influence external laws, and vice versa.

3.2. Qualitative

An interdisciplinary approach encourages and enables the use of unique perspectives and methods in technology law. For one, it accommodates the undertaking of qualitative research to observe and investigate the norms and values present in semi-autonomous fields. Norms and values are highly relevant when analysing and interpreting the actions, attitudes and beliefs of state and non-state actors in relation law, technology and society.

Despite certain complexities and difficulties in studying norms and values (e.g., problems with observability, measurement, interpretation, indeterminacy, quantification, reliability and validity),[101] on balance, these issues can be overcome by resorting to a combination of empirical methods and sources.[102] Standard research methods such as "formal and informal interviews, recording of normal conversations, analysis of the oral and written lore of the group" can be utilised to gather data and analyse the norms and values within a particular field.[103] As Spates argues, in order to study the values and other elements of a culture or subculture, it is critical to investigate them "in situ using multiple observation techniques. This is dictated by the subjective nature of values and the different social settings in which they emerge. Single techniques – even grounded ones – cannot provide complete portraits".[104] Doing qualitative research and fieldwork are vitally important in order to closely observe the depth, nuance and complexity of the fields of study. As Fine points out,

> Norms and behavioral expectations should not be separated from the meaning systems of individuals who enact them or from interaction that occurs in local spaces in which they are enacted. The performance of norms involves a complex construction based on the

[95] Anne Griffiths, "Legal Pluralism" in R Banakar and M Travers (eds), An Introduction to Lawand Social Theory (Hart 2002) 43; see also Michael Anthony C. Dizon, "Rules of a networked society" 92.

[96] Sheila Jasanoff, "Ordering knowledge, ordering society" in S Jasanoff (ed), *States of Knowledge: The Co-Production of Science and the Social Order* (Routledge 2004) 15.

[97] See Bronwen Morgan and Karen Yeung, *An Introduction to Law and Regulation: Text and Materials* (Cambridge University Press 2007) 5-6 (on the facilitative and expressive functions of law); see also Cass Sunstein, "On the Expressive Function of Law" (1996) 144 University of Pennsylvania Law Review 2012.

[98] See William Twining and David Miers, *How to Do Things with Rules: A Primer on Interpretation* (Cambridge University Press 2010) 131; see Ian Curry-Sumner and others, *Research Skills: Instruction for Lawyers* (Ars Aequi Libri 2010) 3-4.

[99] See Barry Bozeman and Daniel Sarewitz, "Public Value Mapping and Science Policy Evaluation" (2011) 49 Minerva 1; see Erik Fisher and others, "The public value of nanotechnology".

[100] Barry Bozeman and Daniel Sarewitz, "Public Value Mapping and Science Policy Evaluation" 6, 15, 18 and 19; Erik Fisher and others, "The public value of nanotechnology" (2010) 85 Scientometrics 29, 31.

[101] Milton Rokeach, *The Nature of Human Values* 26-27; Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 215, 217, 220, 221 and 223; Jack Gibbs, *Norms, Deviance, and Social Control* 11-17; Steven Hitlin and Jane Piliavin, "Values: Reviving a Dormant Concept" 360.

[102] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 395-396; see Amitai Etzioni, "Social Norms: Internalization, Persuasion, and History" 175.

[103] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 406.

[104] James Spates, "The Sociology of Values" 44.

framing of local context, negotiation of the interest of social actors, and the narrative depiction of behavioral rules.[105]

The existence, content, source and influence of norms and values can therefore be investigated through qualitative research that examine all three of the following: (1) actors' *behaviours* and actions, (2) their verbal and written *statements*, assertions and testimonies about appropriate conduct and of the desirable, and (3) how they prescribe and enforce *sanctions and incentives* to ensure conformity.[106]

Actors' behaviours, their statements, and their positive or negative responses to certain conduct are consequently the three primary data sources that can be used to examine their norms and values.[107] Interviews, focus group discussions, participant observation and secondary research are useful for gathering these types of data.[108] A mixed methods approach using "participant observation, in-depth interviews… and document analysis" has similarly been used by social scientists to investigate the norms of subcultures.[109] While some scholars suggest the use of formal surveys for studying norms and values (which tend to elicit very structured and confined replies from respondents),[110] the above three methods (especially interviews and participant observation) are more open-ended, descriptive, and based on people's lived experience, and thus more suited for examining the variety and subtlety of people's processes of meaning-making.[111] Through the triangulation of multiple methods and data sets,[112] both explicit and implicit dimensions of norms and values can be observed and analysed.[113]

3.3. Inductive and interpretivist

In light of the deficiencies of deductive approaches to studying human beings and social interactions (where there is a tendency to impose theories and preconceptions on data rather than making conclusions based on the collected data), it is more suitable to undertake an inductive approach where any conceptualisation or analysis is based on empirical data and built from the ground up.[114] In support of an inductive methodology, Hechter states, "In principle, values can be measured either by asking people to describe their own values or by imputing their values from observed behavior".[115] Spates further claims that values can be studied "'from the ground up'… by undertaking *systematic observation* of people's values and by *constructing grounded hypotheses* concerning how such values operate in concrete social settings".[116] Social scientists, particularly those in the field of STS, similarly endorse an inductive approach to research, and their methodologies "have tended to be qualitative rather than quantitative, thickly descriptive rather than thinly reductionist or model-dependent, deconstructive rather than paradigmatic, self-consciously, often ironically, narrative".[117]

In addition to examining everyday practices, Kluckhohn puts forward "the relative merits of studying values in circumstances of crises and threats…. The observation and investigation of behavior in crisis situations is particularly rewarding".[118] From an actual controversy or crisis, one can observe, draw upon and interrogate the relevant actors about their norms and values.[119] As Gibbs states, a "way to identify the norms of a social unit, [is] to solicit responses… to 'normative questions' such as: Do you approve or disapprove of smoking marijuana?"[120] The responses to such questions reveal a lot about what actors' notions and opinions are about the appropriate and the desirable.

Norms and values have explicit or implicit dimensions. Examining implicit norms and values can be challenging given that their existence and performance can only be indirectly observed through people's overt actions and behaviors, including their imposition of sanctions for deviant conduct. Moreover, the content of these norms and values have to be inferentially constructed (and potentially open to multiple interpretations) by the research subjects themselves, the researcher and even third persons. As Kluckhom states,

> some of the deepest and most pervasive of personal and cultural values are only partially or occasionally verbalized and in some instances must be inferential constructs on the part of the observer to explain consistencies of behavior. An implicit value is, however,

[105] Gary Fine "Enacting Norms: Mushrooming and the Culture of Expectations and Explanations" in M Hechter and KD Opp (eds), *Social Norms* (The Russel Sage Foundation 2001) 161.

[106] Bruce Dohrenwend, "A Conceptual Analysis of Durkheim's Types" 469-470 and 472; Jack Gibbs, "Norms: The Problem of Definition and Classification" 590; Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 396 and 403 (approval or disapproval of conduct can be "shown by many kinds of expressive behavior, by deeds of support and assistance").

[107] See Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 404-405.

[108] See Alan Bryman, *Social Research Methods* (Oxford University Press 2012) 432, 470, 471 and 557; see Mike Crang and Ian Cook, *Doing Ethnographies* (SAGE Publications 2007) 35, 37 and 60; see KD Opp "Norms" 10715-10716; see James Spates, "The Sociology of Values" 39.

[109] Gary Fine "Enacting Norms" 146; see also Michael Hechter and Karl-Dieter Opp, *Social Norms* xiii; see also Reza Banakar and Max Travers, "Ethnography and Law: Introduction to Section Two" in Reza Banakar and Max Travers (eds), *Theory and Method in Socio-Legal Research* (Hart Publishing 2005) 70.

[110] KD Opp "Norms" 10716; Milton Rokeach, *The Nature of Human Values* 27 (who used a values survey); Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 405-406.

[111] Alan Bryman, *Social Research Methods* 470.

[112] Robert Yin, *Case Study Research: Design and Methods* (Sage Publications 2013) 114-116.

[113] See Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 408.

[114] James Spates, "The Sociology of Values" 30, 31, 35 and 43 (in contrast to the highly theoretical and deductive approach of functionalist theory); see John Flood, "Socio-Legal Ethnography" in R Banakar and M Travers (eds), *Theory and Method in Socio-Legal Research* (Hart Publishing 2005) 46; Alan Bryman, *Social Research Methods* 24.

[115] Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 220.

[116] James Spates, "The Sociology of Values" 43.

[117] Sheila Jasanoff, "Beyond Epistemology: Relativism and Engagement in the Politics of Science" (1996) 26 Social Studies of Science 393, 411.

[118] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 407-408; see also Trevor Pinch and Wiebe Bijker, "The Social Construction of Facts and Artefacts" 408 ("the effectiveness of focussing on technological controversies").

[119] See Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 405 (who states "Both individual and group crises… and conflict situations… throw values into relief").

[120] Jack Gibbs, *Norms, Deviance, and Social Control* 11.

almost always potentially expressible in rational language by actor as well as by observer.[121]

Some scholars view the subjectivity and context-dependence of norms and values as evidence that these elements of culture cannot be reliably observed and accurately measured.[122] They point out that "people may conceal their values for strategic purposes" or they "may not know what their values really are".[123] However, these concerns or impediments to investigating norms and values are not insurmountable and they can be sufficiently addressed, overcome and even turned into an advantage by adopting an interpretivist perspective.

As a theoretical paradigm and methodological approach, interpretivism is composed of different theories and schools of thought, but it generally places an emphasis on "the meanings individual actors give to social interactions, and the use of symbols, such as language, in the creation of that meaning".[124] Rather than seeing the subjectivity and multiplicity of meanings of human action as troublesome variables that need to be controlled for or rooted out, interpretivism embraces complexity and diversity and uses them as the very materials from which to understand people's actions and behaviours.

Weber's method of *verstehen* or understanding underpins the interpretivist approach.[125] *Verstehen* is an analytic procedure that seeks to understand an individual's or group's actions by examining the specific meanings, intentions and interpretations that the actors themselves ascribe to their actions within their particular social worlds or cultural contexts.[126] Interpretivism therefore requires delving into the "meaningful, understandable, or interpretable".[127] It is concerned with the important processes of meaning-making and interpretation of human and social action.[128] As Walter explains,

> From the interpretivist perspective, the human world is a world of meaning in which our actions take place on the basis of shared understandings. To understand society, we need to understand people's motives and interpretations of the world. The meanings actors give to their circumstances are the explanation of what they do.[129]

In response to concerns raised earlier about actors strategically concealing their norms and values or putting forward pretend or invented meanings, it bears stressing that interpretations, whether by the actor, the researcher or other parties, do not occur in isolation. Interpretations are based on and must be understood in relation to "established patterns of thought and behavior" or "according to usual modes of thought and feeling" within a particular social situation or cultural context.[130] While an actor may strategically feign a particular meaning (which itself can serve as useful and revealing data), such interpretation is subject to further analysis, comparison and even critique through the triangulation of various analytical and empirical methods and sources discussed in this article. For example, an actor's claim about the existence of a particular value can be analysed together with other empirical data such as that person's behaviour and other statements and the actions and statements of others. The requirements of empirical grounding and shared understandings help guard against a potential slide to or accusation of relativism.[131]

An interdisciplinary methodology is well suited for the socio-legal study of technology, especially when examining the legal, technological and social fields and their concomitant norms and values. This type of research is appropriate for investigating and gathering data about the interpretations and insider's perspective of actors.[132] Focusing on norms and values is pertinent given that these two elements of culture have significant and far-reaching impact on meaning-making as they pertain to people's expectations and evaluations of the appropriate and the desirable.

4. Application and methods

Ascertaining what the relevant norms and values are, where to observe or find them, and how they relate to law, technology and society is the principal concern of the socio-legal study of technology. This approach can be applied in two cases: hacking and encryption.[133] These two are fitting subjects of a normative and axiological study because the law and regulators have struggled to adequately address the cross-cutting legal, technical and social problems and issues that they raise. Hacking is commonly understood as an act to "gain unauthorized access to data in a system or computer".[134] It is considered a crime under computer crimes laws such as the Budapest Convention on Cybercrime and its implementing national legislations.[135] However, hacking is also associated with technological development and innovation. For those knowledgeable of or steeped in hacker culture, hacking is more appropriately described as "the creative, innovative and unexpected use of technology".[136] Given the conflicting and plural nature and effects of hacking, analysing hacker norms and values can help researchers and

[121] Clyde Kluckhohn and others, "Values and Value-Orientations in the Theory of Action" 397.

[122] Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 215 and 220; KD Opp "Norms" 10715-10716.

[123] Michael Hechter, "Should Values Be Written Out of the Social Scientist's Lexicon" 221.

[124] Maggie Walter, *Social Research Methods* 17.

[125] Max Weber, *The Theory of Social and Economic Organization* (The Free Press 1964) 87; Lisa Webley, "Qualitative Approaches to Empirical Legal Research" in P Crane and HM Kritzer (eds), *The Oxford Handbook of Empirical Legal Research* (Oxford University Press 2010) 4.

[126] Peter A Munch, "Empirical Science and Max Weber's *Verstehen de Soziologie*" (1957) 22 American Sociological Review 26, 28, 29 and 31; Guy Oakes, "The Verstehen Thesis" (1977) 16 History and Theory 11, 20.

[127] Guy Oakes, "The Verstehen Thesis" 21.

[128] Guy Oakes, "The Verstehen Thesis" 22; Max Travers, "Qualitative Interviewing Methods" in Maggie Walter (ed), *Social Research Methods* (Oxford University Press 2013) 230

[129] Maggie Walter, *Social Research Methods* 17-18.

[130] Peter Munch, "Empirical Science and Max Weber's *Verstehen de Soziologie*" 31.

[131] Max Travers, "Qualitative Interviewing Methods" 230.

[132] Maggie Walter, *Social Research Methods* 230; Alan Bryman, *Social Research Methods* 399.

[133] The author conducted and published research on hacking and encryption. See Michael Anthony C Dizon, *A Socio-Legal Study of Hacking: Breaking and Remaking Law and Technology* (Routledge 2018); see Michael Dizon and others, *A matter of security, privacy and trust: A study of the principles and values of encryption in New Zealand* (New Zealand Law Foundation and University of Waikato 2019); see also Michael Anthony C Dizon, "A pluralist and interdisciplinary approach to encryption regulation" [2021] New Zealand Law Journal 332.

[134] Oxford Dictionary of English, "Hack".

[135] See Budapest Convention on Cybercrime, art 2; see also US Computer Fraud and Abuse Act and [3].

[136] Michael Dizon, *A Socio-Legal Study of Hacking* 3.

regulators better understand hacker communities as well as inform the development of more suitable technology law and policy.

The same thing can said about encryption, which is "a technology that transforms information or data into ciphers or code for purposes of ensuring its confidentiality, integrity and authenticity".[137] Encryption works by "converting plaintext (unencoded, comprehensible information) into ciphertext (encoded, unintelligible or indecipherable information) using an encryption algorithm and an encryption key".[138] Decryption is the "reverse process of transforming the ciphertext back into plaintext… and requires a decryption key (which may be the same or different from the encryption key)".[139] While seemingly innocuous, encryption is highly controversial from a regulatory perspective because, while it is essential for preserving privacy and information security in the network information society, it can also impede criminal investigations when used by malicious actors to conceal their illicit acts, data and communications. Recognising the fundamental principles and values of encryption and how they are understood and prioritised by different stakeholders can help improve the regulatory approaches to this technology.

4.1. Hacking

4.1.1. Empirical research and fieldwork

In my research on hacking, I utilised mixed methods approach typically used in socio-legal studies and STS to investigate and observe the norms and values involved in hacking. Empirical data about hacker norms and values was collected primarily through interviews and participant observation. I conducted semi-structured interviews with hackers, as well as observed their actions and activities at hackerspaces, hacker camps and hackathons. In order to verify and triangulate the data that I collected,[140] I undertook qualitative content analysis of documents produced by hackers such as their manifestos, and also secondary research on literature and materials written about hacking and hacker culture.[141]

I also engaged in participant observation, which "involves the researcher observing first hand in the research setting. The researcher is free to be an active participant in the normal routines of the research".[142] It was crucial to conduct fieldwork because hackers do not exist in a void and their practices, norms and values are performed within specific socio-technical fields and are subject to influences from both within and outside these settings.[143] The hacker events, hackerspaces and other places that hackers frequent and inhabit were manifestations of Moore's "semi-autonomous social field" discussed earlier.[144] It was useful to analyse hackerspaces or hacker camps as semi-autonomous fields because in these locations hackers "collectively enact, make visible, and subsequently celebrate many elements of their quotidian technological lifeworld".[145] The physical and virtual spaces that hackers inhabit and the places where they hack were empirically rich sites where the norms and values of hacking could be more intimately observed. It is interesting to note that both socio-legal studies and STS share an interest in studying individuals and groups within particular social fields, networks and sites.[146] Socio-legal researchers go on "fieldwork" to collect data,[147] and STS scholars are known for conducting research in scientific and research laboratories.[148] Going out and immersing oneself in the relevant legal, technological and social fields is an essential part of an interdisciplinary and empirically-grounded approach to technology law.

During fieldwork, I collected data in a variety of ways and with different tools. I used a tablet, smartphone and a pocket notebook to quickly and inconspicuously jot down notes and observations. In addition, I used a digital camera to take pictures of specific locations, settings and objects without any person visible or identifiable. I wrote down my notes and observations in a large notebook in the evening of or the morning after the event in order to capture and remember as much information as possible of what took place. These field notes formed part of the collected empirical data.

4.1.2. Hacker norms and values

At the centre of my research on hacking was the development and use of a list of 19 hacker norms and values. They were: anonymity; community development; consensus; creativity and innovation; curiosity; decentralization and self-governance; efficiency; equality and meritocracy; freedom of access; freedom of expression; freedom of information; fun and play; individual autonomy and liberty; openness; personal growth; privacy; security; social development; and transparency. This list was developed from the very beginning of the research and continued to be refined up to the early stages of data collection. An initial list of norms and values was generated based on an extensive literature review of primary and secondary sources on hacker culture and participant observation at hacker events. It should be noted that Rokeach's pioneering research on human values was similarly based on the creation of a "previously constructed list of terminal and instrumental values".[149] The hacker norms and values were then further tested and verified through pilot interviews. The list was also publicly presented at hacker conferences to give members of the hacker community

[137] Michael Anthony C Dizon and Peter John Upson, "Law of encryption: An emerging legal framework" (2021) 43 Computer Law & Security Review 105635, 2-3.

[138] Michael Anthony C Dizon and Philip James McHugh, "Encryption laws and regulations in one of the Five Eyes" (2022) 31 Information & Communications Technology Law 220, 222.

[139] Michael Dizon and Philip McHugh, "Encryption laws and regulations in one of the Five Eyes" 222.

[140] Robert Yin, *Case Study Research* 114-116.

[141] Alan Bryman, *Social Research Methods* 432

[142] Maggie Walter, *Social Research Methods* 82; see also Alan Bryman, *Social Research Methods* 714.

[143] See John Griffiths, "What is Legal Pluralism?" 34.

[144] Sally Falk Moore, "Law and Social Change".

[145] Gabriella Coleman, "The Hacker Conference: A Ritual Condensation and Celebration of a Lifeworld" (2010) 83 Anthropological Quarterly 47, 50.

[146] Reza Banakar and Max Travers, *Theory and Method in Socio-Legal Research* 16; Christine Hine, *Virtual Ethnography* <http://www.cirst.uqam.ca/PCST3/PDF/Communications/HINE.PDF> accessed 15 February 2016, 8; Christine Hine, "How Can Qualitative Internet Researchers Define the Boundaries of Their Projects?" in AN Markham and NK Baym (eds), *Internet inquiry: Conversations about method* (Sage 2009) 4 and 7.

[147] John Flood, "Socio-Legal Ethnography" 37.

[148] Patrice Flichy, *Understanding Technological Innovation: A Socio-Technical Approach* (Edward Elgar 2007) vi-vii; see Bruno Latour and Steve Woolgar, *LABORATORY LIFE: The Construction of Scientific Facts* (Princeton University Press 1986); see Bruno Latour, "Give Me a Laboratory and I will Raise the World" in KD Knorr-Cetina and M Mulkay (eds), *Science Observed: Perspectives on the Social Study of Science* (Sage Publications 1983).

[149] Milton Rokeach, *The Nature of Human Values* 27-29.

an opportunity to provide feedback and even contest the substance and formulation of the norms and values.

The list of hacker norms and values played a key part in the interviews. During the interviews, hackers were presented with the list and asked which three norms and values they considered most important and to explain their reasons. In order to prevent the list from exerting too much influence on the interview respondents and predetermining the actual norms and values that were observed, the list was treated as a general guide and served as an index (as opposed to a complete taxonomy) of the hacker norms and values that could be rather than should be observed. The list was shown to interview respondents as a means to assist or stimulate discussions about what they consider appropriate and desirable, particularly in relation to the hacking technologies and projects they were involved in. Interviewees were also encouraged to explain, critique and even disagree with the norms and values. During the data collection, I was also constantly searching and on the lookout for other norms and values from the statements and actions of the hackers that I spoke to or observed. For example, the value of "fun and play" was added to the list after a number of early respondents specifically stated that it was important. The list of norms and values was thus never fixed or exclusive, and it was subject to constant evaluation and change based on gathered data. To further advance the inductive approach, the norms and values were not precisely defined. By making them broad and open-ended, they retained the flexibility and elasticity to accommodate the multiple meanings that they might elicit from or could be ascribed to them by hackers. Nevertheless, it bears pointing out that the list of hacker norms and values was not completely free from any theoretical or conceptual framing. They should be understood within the framework of the liberal democratic tradition, which has an unmistakable influence on the worldviews and actions of hackers.[150]

Focusing on and using norms and values was critical to my research on hacking because they helped clarify and explain the social, technological and legal dimensions of hacking: why hackers behaved in a certain way, why they designed and built particular technologies, and how they viewed and responded to law.[151] While hackers are admittedly neither angels nor saints, they generally care for fundamental rights and freedoms and respect democratic values. They may be extremely enthusiastic about and can do quite amazing feats with technology, but they are also social actors who have their own deeply held beliefs and rules of behaviors. Hackers highly prize technical creativity and innovation and mastery over technology, however they are also very much aware of the social impact of technology and their social responsibility when using or designing it. Their norms and values are also intimately connected with liberal democratic principles and goals. Hackers cherish individual autonomy and liberty, but they also use their personal freedoms for the benefit of the hacker community and the wider public whether through the creation of open source projects that anyone can freely build and use or through engagement in campaigns to improve the security of private and public information systems. They wholeheartedly strive for openness, transparency and freedom of access to information and technology, yet they also insist on protecting privacy and security, especially for the weak and marginalized in society.[152] They engage in hacking projects and activities for both personal motives and social ends. Aside from breaking, hacking for them is equally about exploring technologies or technical systems, learning how they work, creating something new or surprising, sharing their creations with others, and securing information and technology for the benefit of themselves and society.

It is crucial then for law and policymakers to first understand and take account of hacker norms and values before they adopt or try to implement laws and policies that affect hackers or adversely impact the free and open access to and use of information and technology. Otherwise, these laws can have negative effects and unintended consequences not just on hacking but also on how people in general develop and use technology. Quite a number of technology laws and policies concerning hacking like anti-circumvention laws have not succeeded in achieving their stated goals or have produced unforeseen or problematic outcomes because they seemingly perceive hackers as mere regulatory targets or "pathetic dots"[153] who have no choice but to conform to laws that have been imposed on them from the top-down. But hackers are "active subjects"[154] who resist, contest, negotiate and change laws. This is especially true since, in a highly technological and connected world, hackers and other technical and epistemic groups are possessors and purveyors of much agency and power that can be utilized for technical, social and even legal means and purposes.

Public authorities therefore need to recognize and consider hacker practices, norms and values when developing technology laws and policies that impact hacking. This means restraining the impulse to immediately or sweepingly regulate hacking projects and activities merely because they are new or disruptive or there is fear and moral panic amongst authorities and the public who do not yet fully understand them. As seen in the case of computer crime laws, without a proper understanding of hacker norms and values, technology laws and policies can be overly broad that they end up prohibiting creative or benign forms of hacking.

4.2. Encryption

4.2.1. Focus groups and ranking of values

For my research on encryption, I applied a similar norms and values approach. To fully examine the legal, technical and social fields of encryption, my research team and I conducted a mix of doctrinal legal research, focus group interviews, secondary research, qualitative content analysis, and values analysis of the empirical data.

A major portion of the empirical data was collected through focus groups, which were comprised of three categories of stakeholders: the general public (ordinary users, consumer groups, and civil society organisations); business (technology and non-technology companies, industry associations, and information security professionals); and

[150] See Gabriella Coleman, "Hacker Politics and Publics" (2011) 23 Public Culture 511, 514; see Gabriella Coleman, "Code is Speech: Legal Tinkering, Expertise, and Protest among Free and Open Source Software Developers" (2009) 24 Cultural Anthropology 420, 428 and 437; see Christopher Kelty, "Geeks, Social Imaginaries, and Recursive Publics" (2005) 20 Cultural Anthropology 185, 185; see John S Dryzek, "Liberal Democracy and the Critical Alternative" in *Deliberative Democracy and Beyond: Liberals, Critics, Contestations* (Oxford University Press 2002); see Michael Anthony C Dizon, "Free and Open Source Software Communities, Democracy and ICT Law and Policy" (2010) 18 International Journal of Law and Information Technology 127, 139-140; see Argyro Karanasiou, "The changing face of protests in the digital age: on occupying cyberspace and Distributed-Denial-of-Service (DDoS) attacks" (2014) 28 International Review of Law, Computers & Technology 98, 103.

[151] See Michael Dizon, *A Socio-Legal Study of Hacking* (for a more detailed and extensive discussion of the research findings).

[152] See Julian Assange and others, *Cypherpunks* (Audible 2013) (many hackers subscribe to the creed of "privacy for the weak, transparency for the powerful"); see Chaos Computer Club, "Hacker Ethics" <https://www.ccc.de/en/hackerethics> accessed 9 February 2024.

[153] See Lawrence Lessig, *Code version 2.0* 122-123.

[154] See John Morison, "Modernising Government and the E-Government Revolution: Technologies of Government and Technologies of Democracy" in N Bamforth and P Leyland (eds), *Public Law in a Multi-layered Constitution* (Hart Publishing 2003) 158 and 162-163; see Michael Dizon, "Free and Open Source Software Communities, Democracy and ICT Law and Policy" 134.

government (police and law enforcement officers, government departments, and other branches of government).[155] These stakeholder groups were selected because they were the most concerned about and affected by technology laws and policies on how encryption is used, developed and regulated.[156]

A central part of the focus group interviews involved a group exercise about the principles and values of encryption. Similar to what was done in my hacking research, a list of 10 principles and values related to encryption was developed and used in the research. The list was based on existing legal, technical and social research and literature about encryption.[157] In alphabetical order, these were: data protection; information security; law enforcement and lawful access; national security and public safety; privacy; right against self-incrimination (including right to silence and other rights of persons charged); right against unreasonable search and seizure; right to property; secrecy of correspondence; and trust. The focus group participants were given 10 cards on which were printed a particular principle and value (e.g., privacy). The participants were then asked to rank as a group the values from most to least important. In addition, participants were asked to explain the relationships between and amongst the different principles and values. The members of the focus groups would spread the cards across the table and start to organise and rank them. As they ordered and ranked the cards, the participants were asked to explain what the specific principle and value meant to them and what was the reason for ordering or ranking them that way. By doing so, the focus group participants were able to express how they understood each principle and value and their understandings or definitions would be open to further elaboration, discussion and even contestation within the group. Any similarities or differences in the meanings and conceptions of the focus group participants about the principles and values of encryption provided not only rich qualitative data that could be analysed, but also allowed for constructive and revealing discussions amongst the participants. Furthermore, through the ranking exercise, focus group participants were able to visualise and reflect on the priority or significance they gave to each principle and value of encryption, as well as the connections between them. The primary benefit of the group ranking exercise was that it provided qualitative data that served as an empirical basis from which my research team and I compared the differing meanings, prioritisation and relations of the principles and values of encryption between and across the different categories of stakeholders (i.e., the general public, businesses and government). In this way, it was possible to compare and contrast the positions and views of various stakeholders about the legal, technological and social dimensions of encryption with each other and investigate the conflicts as well as possible correspondences between them.

Pursuant to the qualitative and inductive methodology, the focus group interviews were recorded, transcribed and then coded and analysed using thematic analysis. Thematic analysis entails finding and identifying themes in the collected data through the process of coding.[158] Coding is essentially the process of applying descriptive and conceptual labels and categories to segments or parts of the interview transcripts (e.g., a participant's answer to the question of whether or why he or she uses encryption) and then discerning connections and relations that arise from these codes.[159] The codes used in the analysis included a priori codes (which were based on key concepts or topics from the research questions, literature review and interview guide),[160] in vivo codes (terms used by the participants themselves),[161] and inductive codes (those that emerged or arose out of a higher level conceptual analysis of the coded data).[162]

4.2.2. Principles and values of encryption

Based on the coding and qualitative data analysis of the focus group interviews, particularly the ranking of values exercise, there were a number of revealing findings and insights about the legal, technological and social aspects of encryption. For one, there was a discernible hierarchy or prioritisation of principles and values for the three groups of stakeholders (see Fig. 2). The principles and values of encryption were classified into top tier and second tier. This organisation was based on the ranking exercise as well as the prominence or importance the participants placed on each principle and value in the overall discussions during the focus groups.

Overall, for all categories of stakeholders, privacy was considered the most significant principle and value of encryption. After privacy, data protection, information security, trust, national security and public safety, and right to property made up the top tier. The second tier was comprised of secrecy of correspondence, law enforcement and lawful access, right against unreasonable search and seizure, and right against self-incrimination (including right to silence and other rights of persons charged).

The classification of the principles and values into top and second tiers generally held true across the three groups of stakeholders albeit with some variations (see Fig. 2). For instance, members of the general public considered secrecy of correspondence to be top-tier while national security and public safely was second-tier. For businesses, information security was considered the highest principle and value, and secrecy of correspondence was also in the top tier. Representatives from businesses also placed greater importance on national security and public safety and right to property compared to the overall ranking. With regard to government, national security and public safety was second only to privacy as the topmost principle and value. In contrast to the other stakeholders, participants from government assigned right against unreasonable search and seizure to the top tier, but relegated information security to the second tier. Curiously, government participants and other stakeholders viewed law enforcement and lawful access as only a second-tier value.

Using a norms and values approach made it possible to observe and discern the differing priorities between and amongst the three groups of stakeholders. For example, given their high ranking across all stakeholders, the protection of privacy and data protection can be made principles or guides in the development and adoption of encryption regulation. In terms deliberation and consensus building, the focus groups provided a means for various stakeholders to participate and give their inputs and this made it possible to hear their views and see the world through their eyes. The rationale behind the normative and axiological approach is that any potential encryption law or regulation will only be adopted or deemed legitimate if it genuinely considers and takes into account the views and concerns of all relevant stakeholders. It makes sense for future encryption laws and policies to be founded on the

[155] See Michael Anthony C Dizon, "The value of trust in encryption: Impact and implications on technology law and policy" (2023) IEEE Transactions on Technology and Society doi: 10.1109/TTS.2023.3237987, 1-2.

[156] See Michael Dizon, "The value of trust in encryption" 1-2.

[157] See Michael Dizon and others, *A study of the principles and values of encryption in New Zealand* 115-116.

[158] Maggie Walter, *Social Research Methods* 398.

[159] Kathy Charmaz, *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis* (SAGE Publications 2006) 43.

[160] Maggie Walter, *Social Research Methods* 324-325.

[161] Alan Bryman, *Social Research Methods* 573.

[162] Maggie Walter, *Social Research Methods* 325.

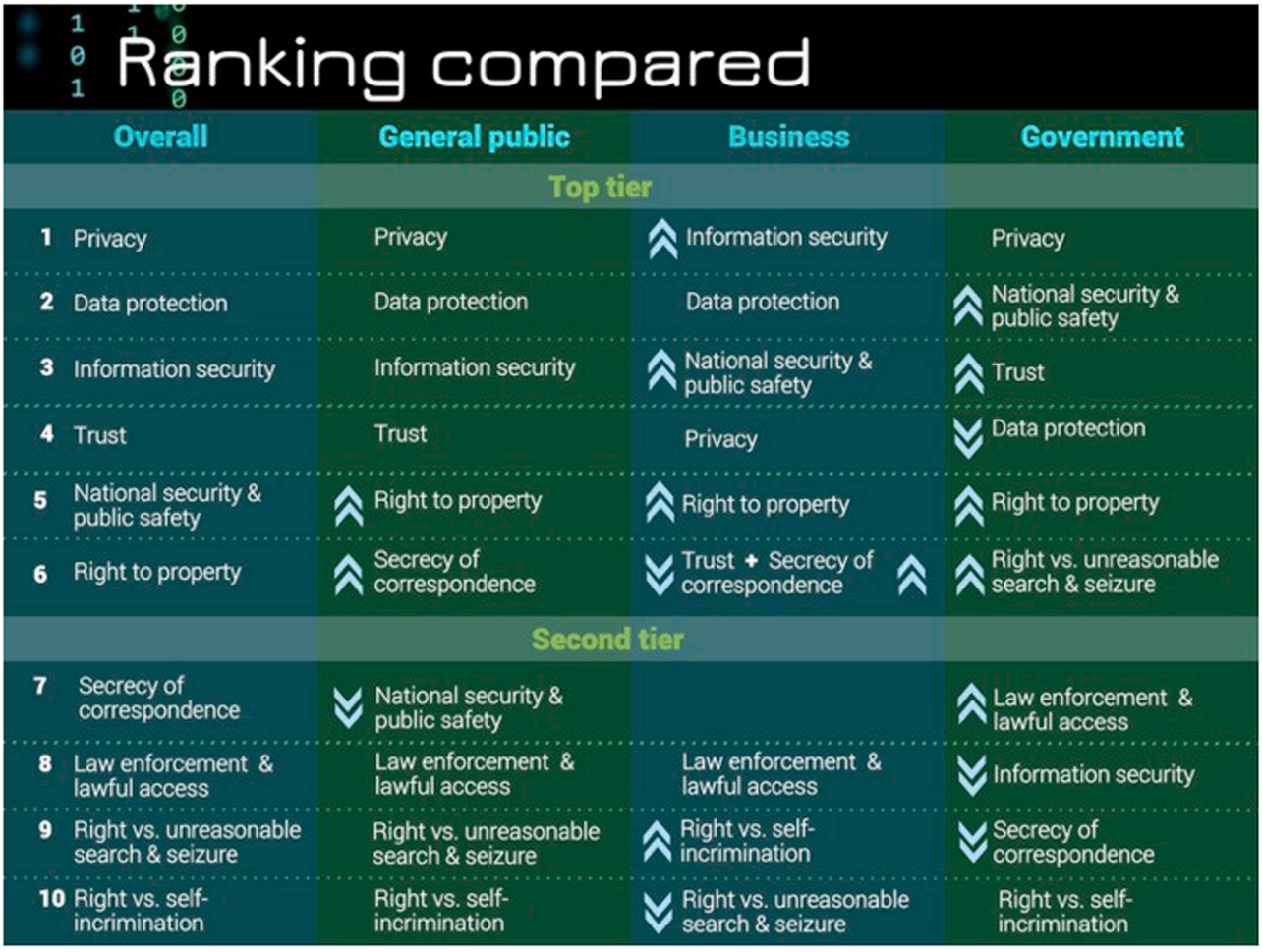

Fig. 2. Ranking of principles and values of encryption.

relevant norms and values and promote the interests of those who would be most impacted by them: the general public, business, and government. This is in contrast to many prior unsuccessful attempts to develop encryption regulations that were carried out by and for the benefit of a single group of stakeholders (whether by the government or information security community) and merely espoused their own positions without genuinely or sufficiently addressing others' concerns. It is vitally important then for the development of laws and policies whether in relation to encryption or any other technology to examine and consider the norms and values of the relevant stakeholders and society as a whole.

5. Legal, technological and social fields

The above examples on hacking and encryption illustrate the significance of norms and values to technology law and the development of technology laws and policies more generally. Norms and values serve as the underlying bases that guide and determine people's perceptions and actions whether in relation to law, technology or society. By determining what these norms and values are and how they relate to law and technology, it becomes possible to properly contextualise the technology or technical actors involved within the relevant socio-technical fields and the wider legal context. From there, it is possible to find and constructively build on the points of intersection and interaction between the legal, technological and social. In this way, a norms and values approach can help contribute to the understanding of the legal and normative impact of technologies, advance a more social and actor-orientated perspective to technology law, and offer new or improved ways to regulate and govern technology.

Technology law can derive much benefit from this normative and axiological approach. Technology law scholarship is admittedly ahead in terms of its appreciation of the importance of knowing how a specific technology works and its ramifications on existing or proposed laws. In essence, most if not all technology law research is about describing and analysing the interactions between the legal and the technical. While technology law has the legal and technical down pat, it can be further improved by focusing on the often neglected social dimension of new or disruptive technologies or technical activities.[163] As with law and society, technology is *semi-socially constructed and constructing*.[164] A great deal of literature in socio-legal studies deals with the social construction and embeddedness of law and the stark contrast between black letter law (law in books) and the law as experienced in everyday life (law in

[163] See Alan Bryman, *Social Research Methods* 393 and 396.

[164] See Trevor Pinch and Wiebe Bijker, "The Social Construction of Facts and Artefacts"; see Sheila Jasanoff, "Beyond Epistemology"; see Patrice Flichy, *Understanding Technological Innovation*; see Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Polity Press 1984); see Sally Falk Moore, "Law and Social Change"; see Franz von Benda-Beckmann, "Who's Afraid of Legal Pluralism?" (2002) 47 Journal of Legal Pluralism 37.

action).[165] Similarly, considerable STS research is devoted to explicating the co-production of technology and society.[166] This means that to more fully comprehend and evaluate the impact of a technology like encryption or a technical practice such as hacking, it is indispensable to examine the social practices, beliefs and contexts of the persons or groups involved, especially the norms and values embedded and enacted in their technologies or technical activities.[167] Examining the attendant cultures and practices is vital because it can provide a more nuanced appreciation of how things work and why persons act the way they do. This can potentially lead to more socially-informed and empirically-based strategies and solutions to the problems brought about by emerging or disruptive technologies and socio-technical change.

A norms and values approach can definitely produce a more grounded and in-depth understanding of the legal, technological and social fields. By focusing on the relevant technology and its dynamic relations with law and society, it becomes possible to observe and recognise what and whose norms and values actually regulate and govern behaviour in a digital and connected world.

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Data availability

The data that has been used is confidential.

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[165] See David Nelken, "Law in action or living law? Back to the beginning in sociology of law" (1984) 4 Legal Studies 157; see David Nelken, "The 'Gap Problem' in the Sociology of Law: A Theoretical Review" (1981) 1 Windsor Yearbook of Access to Justice 35; see Roger Cotterrel, *Law's Community: Legal Theory in Sociological Perspective* (Oxford University Press 1995); see Max Travers, *Understanding Law and Society* (Routledge 2010); see John Griffiths, "The Social Working of Legal Rules" (2003) 48 Journal of Legal Pluralism 1; see David M Trubek and John Esser, "'Critical Empiricism' in American Legal Studies: Paradox, Program, or Pandora's Box" (1989) 14 Law & Social Inquiry 3; see Amir Licht, "Social Norms and the Law: Why Peoples Obey the Law" (2008) 4 Review of Law and Economics 715; see Peer Zumbansen, "Transnational Legal Pluralism" Comparative Research in Law & Political Economy Research Paper 01/2010.

[166] See Sheila Jasanoff, "Beyond Epistemology"; see Sheila Jasanoff, "Ordering knowledge, ordering society" 15; see Trevor Pinch and Wiebe Bijker, "The Social Construction of Facts and Artefacts"; see Helga Nowotny, "How Many Policy Rooms are There?: Evidence-Based and Other Kinds of Science Policies" (2007) 32 Science, Technology & Human Values 479, 480.

[167] See Helen Nissenbaum, "How Computer Systems Embody Values" 120 and 118; see Batya Friedman (ed), *Human Values and the Design of Computer Technology* (Cambridge University Press 1997); see Trevor Pinch and Wiebe Bijker, "The Social Construction of Facts and Artefacts" 428; see Sven Dietrich and others "Ethics in data sharing".