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**‘Lowering your standards’?: assessing the procedural legitimacy
of the World Wide Web Consortium (W3C)**

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Abstract

Today technical web standards have become one of the most important mechanisms of internet governance, impinging on a wide range of areas of public policy from privacy and to freedom of speech. Despite their importance, however, the processes through which web standards are developed are not well understood, and to date, very little empirical research has been conducted to examine the procedural legitimacy of web standards consortia. To address this gap in the literature, this thesis develops and applies an analytical framework inspired by deliberative democratic theory to assess the procedural legitimacy of the World Wide Web Consortium in the context of its development of the highly controversial Encrypted Media Extension specification. In doing so, the thesis argues that the W3C is characterised by a lack of procedural legitimacy. Specifically, it will be shown how the framing of the W3C as a purely coordinative and technical organisation acted to marginalise principle based objections to the EME proposal and undermine participant's attempts to engage fully with the public policy questions raised by the specification. The thesis also raises concerns about the consortium's diversity and outlines several practical recommendations for how the procedural deficits identified by the research might be addressed.

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List of abbreviations

API	Application Programming Interface
APA WG	Accessibility Platform Architecture Working Group
CDA	Communications Decency Act
CDM	Content Decryption Module
CDT	Centre for Democracy and Technology
CEN	European Committee for Standardisation
Cfc	Call for Consensus
CSS	Cascading Style Sheet
DMCA	Digital Millennium Copyright Act
DQI	Deliberative Quality Index
DRM	Digital Rights Management
EFF	Electronic Frontier Foundation
EME	Encrypted Media Extensions
EU	European Union
FOSS	Free and Open Software Movement
FPWD	First Public Working Group
FSF	Free Software Foundation
HTML	HyperText Markup Language
IAB	Internet Architecture Board
ICANN	The Internet Corporation for Assigned Names and Numbers
ICCPR	International Covenant on Civil and Political Rights
IEEE	Institute for Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IGF	Internet Governance Forum
IMF	International Monetary Fund
IRTF	Internet Research Task Force
ISO	International Standards Organisation
ISOC	Internet Society
ITU	International Telecommunication Union
MAUR	Media Accessibility User Requirement
MPAA	Motion Picture Association of America
MPTF	Media Pipeline Task Force
MPTF	Media Pipeline Task Force
NSF	National Science Foundation
OSI	Open System Interconnection
P3P	Privacy Preference Project
PING	Privacy Interest Group
RFC	Request for Comments

RIAA	Recording Industry Association of America
SCOT	Social Construction of Technology
SDO	Standards Development Organisation
SSK	Sociology of Scientific Knowledge
STS	Science and Technology Studies
TAG	Technical Architecture Group
TCP/IP	Transmission Control Protocol/Internet Protocol
TPWG	Tracking Protection Working Group
UDHR	Universal Declaration of Human Rights
W3C	World Wide Web Consortium
WIA	Web Accessibility Initiative
WIPO	World Intellectual Property Organisation
WTO	World Trade Organisation

Introduction

How the code regulates, who the code writers are, and who controls the code writers—these are the questions on which any practice of justice must focus in the age of cyberspace. The answers reveal how cyberspace is regulated.

Lawrence Lessig (2009, p. 182)

Choice manifests itself in society in small increments and moment-to-moment decisions as well as in loud dramatic struggles... [H]e who does not see choice in the development of the machine merely betrays incapacity to observe cumulative effects until they are bunched together so closely that they seem completely external and impersonal."

Lewis Mumford (1934, p. 6)

Today standards are ubiquitous to almost all aspects of modern life. From railway gauges and AC power to plugs and MP3s, standards provide technicians and engineers with the technical blueprints required to ensure interoperability and compatibility between heterogeneous technological products, generating economies of scale and achieving the kinds of efficiencies necessary to produce sustained economic growth. Though commonly perceived as a mundane and esoteric aspect of global governance, the ways in which standards are designed and implemented, play a critical role in the modern economy, enabling the integration of large-scale technical systems, and facilitating the development and maintenance of increasingly complex networks of socio-economic activity (Bowker & Starr, 2000; Hanseth & Monteiro, 1998).

Nowhere is the role of standards more evident than on the web¹. Whether users are aware of it or not, even the simplest of online tasks, such as sending an email, watching a video on YouTube or making a purchase on Amazon, involves engagement with myriad

¹ A note on terminology: This thesis uses the term "standard" synonymously with "protocol". Protocols are usually used to refer to a subset of standards which deal principally with networking. "Specification" and "recommendation" are other terms used to refer to standards at the W3C.

technical standards and protocols. Some like Wi-Fi, enable devices to connect to the internet, others such as HTML and CSS pertain to the structure and appearance of web pages, while standards such as TCP/IP facilitate the exchange of data packages across the network. Regardless of their specific application, all web standards ultimately seek to provide a common set of rules by which software and hardware developers can build open and accessible systems, ensuring the interoperability of devices and providing common platforms for the exchange of information (DeNardis, 2011). Simply put, web standards are the technological artefacts that enable two users on opposite sides of the world, using devices produced by different manufacturers, and running different types of software and operating systems to communicate and share information. Standards are as such, a fundamental component of the web's technical infrastructure, without which the notion of the web as a decentralised global information network, open and accessible to all, would be simply inconceivable.

In addition to their technical coordinative role, recent internet scholarship has increasingly begun to acknowledge the importance of web standards as powerful modalities of regulation (DeNardis, 2009; Lessig, 1999; Morris & Davidson, 2003). Though mostly obscure to the casual user, the way in which standards are designed and implemented is increasingly understood as having an enormous bearing on the everyday operation and character of the web, instantiating political and economic tensions and impinging upon a wide range of policy issues from counter-terrorism and privacy to copyright enforcement and free speech. As was observed by the European Commission (1996, p. 1), 'standards are not only technical questions. They determine the technology that will implement the Information Society, and consequently the way in which industry, users, consumers and administrations will benefit from it'.

At the same time that scholars have begun to recognise the social, economic and political effects of standards, many are also beginning to challenge long-held deterministic notions about how standards themselves come to be. Contrary to the traditional view of standards

as the inevitable or predetermined product of some objective logic of technical efficiency, today many scholars interpret the standards which comprise the underlying technical infrastructure of the web, as reflective of the technological, economic and political context of their creation as well as the interests and intentions of their designers. From this perspective, standards are no longer viewed as technologically determined but instead socially constructed, or as Ken Adler (1995, p. 39) put it 'at the core of "universal standards" commonly taken to be products of objective science lies the historically contingent... these seemingly "natural" standards express the specific, if paradoxical, agendas of specific social and economic interests'. In this way, it is argued, standardisation processes should not be interpreted merely as the apolitical pursuit of technical compatibility, but rather as among some of the most critical and dynamic sites of political and economic contestation of contemporary politics.

This dual recognition of standards as both politically consequential and socially constructed inevitably raises important normative questions regarding the openness and transparency of the processes and procedures through which techno-policy standards are designed and implemented as well as the legitimacy of the standards development organisations themselves. Since as Hamlett (2003, p. 115) observed; 'it seems only a small step from asserting that technologies are socially constructed... to asking more normative questions: How should technologies be constructed'.

Despite the growing awareness of the importance of web standards development to digital rights, security and the global economy, the political architecture and legitimisation claims of the institutions which produce many of the world most essential web standards, remain largely misunderstood. This confusion regarding the status and legitimacy of web standards organisations as institutions of global governance, can in part be explained by their apparent resistance to definition using conventional models of legitimacy grounded in liberal democratic concepts such as accountability and representation. As with a growing number of other technocratic transnational institutions, the complex networks of informal

standards bodies and consortia that comprise the contemporary web standards ecosystem, are characterised by their highly privatised and decentralised nature and operate almost entirely beyond the narrow institutional parameters of traditional nation-state bureaucracies. As a result, web standards organisations typically lack the kinds of formal democratic mechanisms of legitimation usually associated with national policy-making bodies (Hawkins, 1999).

The absence of democratic sources of legitimacy raises the question of how the legitimacy of standards bodies can be conceptualised. Until recently, scholars have noted how the legitimation claims of web standards organisations have been almost entirely dependent upon the adoption or use of their standards by relevant stakeholders. From this perspective, the legitimacy of standards organisations has been interpreted mainly in terms of the perceived technical quality of their substantive outputs as well as their procedural efficiency (substantive legitimacy) - both of which contribute considerably to the overall likelihood of a standard's acceptance by the marketplace.

However, as the political consequences of standards development have become increasingly apparent, some scholars have begun to question the appropriateness of measuring the legitimacy of standards organisations in purely substantive terms (Fuchs et al., 2011). Specifically, they observe how the increasingly interconnected relationship between standards development and policy-making requires designers and engineers to make a growing number of value-based judgements regarding the social effects of their standards. In contrast to purely technical questions concerning compatibility or technical performance, commentators observe how these judgements are by their very nature contested, and so inevitably necessitate greater critical consideration of the processes through which consensus regarding the technical and policy objectives of standards is achieved. From this perspective, it is necessary not only to evaluate the legitimacy of web standards organisations in terms of the quality or acceptance of their technical outputs but

also in terms of the openness and transparency of the procedures through which consensus regarding the desired effects of those outputs is determined.

Although the precise nature of the procedures used to develop standards varies from organisation to organisation, most web standards processes can today be characterised as sharing a 'rough consensus and running code' ethos of standards development. Tracing its origins back to the academic roots of the early internet, this highly pragmatic approach to standardisation combines meritocratic work practices and rigorous testing with a strong commitment to open, deliberative and consensus-led development processes which facilitate and encourage the participation of a broad range of stakeholders (Iversen et al., 2004).

In recent decades, the ethos of 'rough consensus and running code' has emerged as the dominant model of standards development and is today often heralded by practitioners and scholars alike as a paragon of legitimate self-regulation and an exemplar of effective multi-stakeholder governance (Froomkin, 2003; Russell, 2006; Doty and Mulligan, 2013). Among the most notable plaudits, are those who identify a close correspondence between the informal and consensus-led practices of contemporary standards organisations and the principles of deliberative democratic theory – which holds at its centre a belief in the legitimising power of rational discourse (Froomkin, 2003; Umpathy et al., 2012). For scholars such as Michael Froomkin (2003), contemporary standards bodies can thus, not only be considered as procedurally legitimate but as amongst the best contemporary examples of deliberative governance in practice.

Others, however, remain far more sceptical about the legitimising potential of the 'rough consensus' ethos, noting for example, how the rapid growth and commercialisation of the web over the past two decades has resulted in the domination of most major standards bodies by powerful corporate actors motivated by a narrow range of commercial interests (Halpin, 2013; King, Grinter, & Pickering, 1997; Schoechle, 2009). In such circumstances,

scholars argue the pressure exerted on standards bodies to pursue the economic objectives of their members and to remain responsive to the technical needs of the market, undermine their capacity to facilitate the kinds of rigorous, inclusive and consensus-orientated deliberative processes needed to legitimise their technical outputs (Davidson, Morris, & Courtney, 2002; Garfinkel, 1998; Schoechle, 2003). Furthermore, others have also questioned the extent to which the communities of engineers and computer scientists which comprise most technical working groups, can realistically be expected to comprehend the complex socio-economic implications of their work or to competently contribute to policy debates about which they have no specific expertise (Malcolm, 2013). Finally, some scholars have also raised concerns about the significant western bias that is a feature of many contemporary standards organisations as well as the underrepresentation of women in standards development internationally.

Thus, at a time when the ever-increasing encroachment of standards bodies into areas of public policy has made the openness and inclusivity of standards development more important than ever, serious questions remain regarding the suitability and legitimacy of the 'rough consensus' model of standardisation as well as the willingness and capacity of standards bodies to adequately consider the social and political implications of their technical outputs (Garfinkel, 1998; Halpin, 2013; King, Grinter, & Pickering, 1997; Schoechle, 2009).

Nowhere has the urgency of these questions been more clearly demonstrated than at the World Wide Web Consortium (W3C). Founded in 1992 by the inventor of the web Tim Berners-Lee, the W3C is today one of the world's largest and most influential web standards organisations; responsible for the development of some of the web's most well-known and widely implemented standards including, HTML and CSS (Berners-Lee, 2000). Often described as adopting a 'rough consensus and running code' model of standardisation, over the years the W3C has been widely praised for what many perceive to be its open and consensus-driven process as well as its leadership on a range of

issues including accessibility and more recently privacy (Jaffe, 2014; Russell, 2003). As commercial pressures on the standards community have gradually increased, however, the consortium has - like very many other web standards organisations – found it increasingly difficult to balance its responsibility to efficiently address the technical requirements of its membership with the growing calls for greater public participation, transparency and due process.

Between 2012 and 2017 these tensions were brought into sharp focus by the W3C's development of the Encrypted Media Extension specification (EME) – an extension to the W3C's flagship HTML standard – which aimed to provide a standardised means by which web applications could discover, select and interact with Digital Rights Management technologies (DRM), to allow for the playback of encrypted content within web browsers. For its authors and proponents, the specification was necessary to protect online video content from copyright infringement and to promote the continued growth of the nascent streaming services industry (Jaffe, 2013). For its opponents, the proposal represented a cynical attempt by the content industries and their commercial partners to protect their business interests and posed a severe threat to a wide range of open web principles including, accessibility, interoperability, security, and user rights (O'Brien, 2013).

In late 2017, following over five years of negotiations and development the EME specification was finally approved as an official W3C recommendation. Although supporters of the specification maintained that the process had been open and transparent, the controversy nevertheless caused the W3C substantial reputational damage, with many commentators accusing the consortium of subservience to corporate interests and of failing to adequately consider the concerns of the specifications critics (Lunduke, 2017). More broadly, the controversy also renewed the debate concerning the status of web standards organisations as institutions of internet governance as well as the legitimacy of their role in the technical arbitration of public policy disputes.

Despite the seriousness and urgency of the questions raised by the development of EME and other techno-policy standards, the political architecture of the web standards organisations which shape their development remains under-analysed, and to date, surprisingly few empirical studies of the procedural legitimacy of standards bodies have been conducted (Doty & Mulligan, 2013; Hahn & Weidtmann, 2016; Umapathy et al., 2012). Moreover, although allusions to affinities between the 'rough consensus' model of standardisation and the ideals of deliberative democratic governance are common within much of the scholarly literature, to the researcher's knowledge no in-depth empirical analysis of a techno-policy standards development process has yet been completed to test the validity of these claims (Froomkin, 2003).

To address this gap in the research, this thesis develops and applies an original analytical framework inspired by deliberative democratic theory to assess the procedural legitimacy of the W3C in the context of its development of the highly controversial EME specification. Using an innovative form of content analysis inspired by previous empirical studies of deliberative fora, the research produces an in-depth analysis of the W3C mailing lists as well as other aspects of the W3C development process, in order to assess the quality of the consortium's deliberations and decision-making procedures against several metrics of deliberative procedural legitimacy including; inclusivity, transparency, deliberativeness, constructiveness, respect, and justification. By examining the development of the EME specification in this way, the research will not only describe the deliberative quality and procedural legitimacy of the W3C as a whole but also provide valuable insights into the cause of any procedural deficiencies². Variation in the performance of the W3C process across the several policy issues affected by the development of EME will also be analysed to provide further insights into the W3C's management of techno-policy standards

² It is important to note that this thesis does not attempt to address the effectiveness or impact of W3C recommendations. Instead, the focus of the thesis is purely the procedural legitimacy of the W3C process and the lessons this can teach us about the development of techno-policy standards.

development. Together the findings of the research will be used to develop recommendations for improvements to the W3C process.

The primary research question which this thesis seeks to address can be summarised as follows:

- 1) To what extent can the W3C's development of the Encrypted Media Extension specification be described as procedurally legitimate?

In the process of answering this primary research question, this thesis will also address the following secondary research questions.

- 2) With which indicators of deliberative procedural legitimacy (if any), does the W3C process comply?
- 3) To what extent does the deliberative quality of the discussions vary between different policy issues? If so, why?
- 4) What lessons can be learned regarding best practice for the development of techno-policy standards?

To address these questions, I begin in chapter one by establishing the rationale and motivation for the thesis. Using Yochai Benkler's (1999) layer model of the internet governance, I demonstrate how by virtue of their privileged position within the technical infrastructure of the web, standards can function as effective modalities of control. Drawing on literature from Science and Technology Studies (STS), I then argue that - in contrast to deterministic accounts of technological development - the regulatory role of standards should be interpreted not as the inevitable product of some objective technical rationality, but rather as the outcome of intentional design; reflecting the interests and values of the proximate designers who create them (Bijker et al., 2012; Jasanoff, 2004; Winner, 1980). Together I argue, these two claims, draw our attention to the importance of standards bodies as key sights of political and economic contestation, and consequently

to questions regarding the openness and legitimacy of the processes through which standards are developed.

In chapter two, I proceed to examine how the legitimacy of web standards consortia such as the W3C can be conceptualised. Highlighting the ways in which the development of techno-policy standards has necessitated increased scrutiny of development processes, I argue in favour of a normative approach to legitimacy which emphasises the need for standards bodies to exhibit both substantive and procedural legitimacy. In the second half of the chapter, I then propose deliberative democratic theory as a model of procedural legitimacy which is particularly well suited to describing the informal, meritocratic, collaborative, and deliberative processes of standards bodies – and highlight some of the parallels that previous scholars have drawn between deliberative theory and contemporary web standards development processes.

In chapter three, I outline an original analytical framework for the assessment of the W3C's development process inspired by deliberative democratic theory. Through a review of the existing literature on deliberative democratic theory, I identify several normative indicators of deliberative procedural legitimacy (inclusivity, transparency, deliberativeness, justification, respectfulness, and constructiveness), and demonstrate how each of these can be interpreted and operationalised in the context of standardisation (Cohen, 1989; Dryzek, 2012; Habermas, 1985).

In chapter four, I draw upon existing empirical studies of the procedural legitimacy of deliberative fora, to demonstrate how the analytical framework outlined in chapter 3 can be applied empirically to assess the procedural legitimacy of the W3C in the context of its development of the EME specification. I begin by justifying the choice of EME as the case study, before describing how data from the W3C mailing lists as well as other relevant information about the W3C process was selected, sampled and collated. Finally, I explain how an innovative form of content analysis was applied to the mailing list data in

order to measure the performance of the W3C in relation to each of the indicators specified in the analytical framework.

In chapter five, I establish the context for the EME case study by providing a brief overview of the W3C's origins, process and political culture. Specifically, I demonstrate how the consortium's development of techno-policy standards has highlighted key tensions between competing interpretations of the W3C's role as an institution of internet governance and raised concerns about its capacity and willingness to acknowledge and address the public policy implications of its standards.

Finally, in chapter six I present the results of the empirical analysis of the W3C's development of the EME specification, including an in-depth discussion of the EME development process as well as a summary of some of the research's key findings. In the chapter, it will be argued that although the W3C exhibited many of the institutional features needed to demonstrate procedural legitimacy, - including, for example, a discursively inclusive and transparent development process - concerns nonetheless remain regarding the consortium's capacity and willingness to adequately consider the effects of its standards on policy issues, including most notably those related to user rights and content protection. Specifically, it will be shown how the framing of the W3C as a purely coordinative and technical organisation acted to marginalise principle and value-based concerns regarding the social and political implications of the EME specification, thereby limiting the scope of the deliberations and thus the potential outcomes of the process. In addition, it will be demonstrated how in contrast to popular perceptions of the W3C as an active and influential advocate for digital rights and open web principles, the gradual domination of the W3C process by a narrow range of powerful incumbent commercial interests has limited the influence that the W3C can feasibly be expected to exert on standardisation processes.

Given these findings, the thesis concludes by raising concerns about the procedural legitimacy of the W3C and outlines several practical recommendations for how some of the procedural deficits identified by the research might be addressed.

1. “Code is Law”: Standards as technologies of internet governance

‘Standards are politics by other means’

Janet Abbate (2000, p.179)

In 1996, the founder of the Electronic Frontier Foundation (EFF) John Perry Barlow (1996) famously declared the ‘independence of cyberspace’. In a polemic widely distributed online, Barlow condemned what he perceived to be the growing interference of Western governments in internet affairs, claiming that those whom he poetically termed the ‘weary giants of flesh and steel’ lacked either the moral right or means to govern. Addressing the subjects of his diatribe directly, Barlow (1996) boldly proclaimed;

‘I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather... Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world. Cyberspace does not lie within your borders.’

While undoubtedly utopian, Barlow's comments were nonetheless reflective of a more widely-held view of the internet as a fundamentally emancipatory and anarchic space (Dyson, 1996; Rheingold, 2000). Even to this day, the web is often portrayed as an intrinsically open domain of frictionless connectivity, whose global scope and decentralised structure make it naturally resistant to statutory regulation or hierarchical forms of control (Drissel, 2006). For Barlow and others, therefore, the underlying architecture of the web can be conceived of as a complex and adaptive system; ‘treat[ing] censorship like damage’ as John Gilmore put it, and ‘rout[ing] around it’ (as cited in Elmer-Dewitt & Jackson, 1993, p.63).

Although it is often tempting to romanticise the web's architecture as somehow inherently anarchic, such idealistic and reified accounts of the web often neglect the manifold ways in which it is governed. From the coordination of critical infrastructure to the monitoring and regulation of content, the practice of internet governance is today enacted by a bewildering and ever-growing array of public and private entities operating within a 'technologically concealed and institutionally complex ecosystem of governance' (DeNardis, 2014, p. 1).

Among the most important threads of this complex tapestry of governance, I argue, are the processes and institutions of technical standardisation that dictate the terms upon which information can be exchanged via the network. By providing a common set of rules with which developers can make their products interoperable, key standards such as HTTP, HTML and CSS have, since the web's early development, allowed disparate elements to be combined into a cohesive yet flexible network capable of supporting and sustaining increasingly complex technical and social interactions (Jakobs, 1999; Updegrave, 2008). In addition to their essential technical coordinative role web standards have in recent years increasingly been interpreted as playing a highly regulative role, instantiating political and economic tensions and impinging upon a wide range of policy issues from counter-terrorism and privacy to copyright enforcement and free speech (DeNardis, 2009, 2011; Kahin & Abbate, 1995).

But how can the policy-making role of standards be understood within the broader context of internet governance? How can the regulatory power of standards themselves be conceptualised? And what questions do such conceptualisations raise for the legitimacy of standardisation processes?

In this chapter, I make two claims which together constitute the motivation for this thesis. Firstly, I argue that technical web standards can today be thought of as some of the most effective and important technologies of online regulation. Secondly, in contrast to

deterministic accounts of technological development, I claim that this regulatory role should be interpreted not as the inevitable product of technical rationality, but rather as reflective of the interests and values of the proximate designers who create them. Together I argue, these claims, draw our attention to the importance of standards bodies as key sites of political and economic contestation, and as such raise questions regarding the openness and legitimacy of the processes through which standards are developed.

Beginning with a brief discussion of some of the various definitions of standards and standardisation processes, I argue that to comprehend the regulatory function of standardisation fully, we must first understand the role of web standards within the broader context of internet governance. Adopting Benkler's (1999) layer model of internet governance, I then show how by virtue of their intermediary position within the technical architecture of the web, standards can exert a powerful influence over openness and freedom online. Following a brief discussion of some recent examples of standards which have impacted issues of public policy, I then proceed - through an overview of some existing theories of the politics of technology - to demonstrate how far from being politically neutral, standardisation is a highly contested process through which technical standards come to reflect the interests and intentions of their designers. I conclude by highlighting some of the normative questions that this raises for standards bodies.

Standards and standardisation

Today standards and standardisation processes are becoming an increasingly important object of study in International Relations as scholars and researchers have begun to acknowledge the economic, social and political effects that standards can have on an increasingly interconnected and networked society. Despite this recognition, precisely what standards are, why they are produced, and what they achieve; are all questions to which the literature on standardisation has ironically failed to provide a

uniform answer. Definitions of standards range from the very general, for example 'standards are pieces of general advice offered to a large number of potential adopters' (Brunsson & Jacobsson, 2000, p. 2), to the specific, 'a [standard is] a document, established by consensus and approved by a recognised body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context' (De Vries, 2013, p. 149)

In part, this indeterminism within the literature on standardisation is a testament to the heterogeneity of the phenomenon itself. Web standards can be used to specify almost anything online from accessibility guidelines and processes, to file formats and browser plugins. They can be enforced by law or be voluntary, anticipatory or reactive, produced by institutions or by the marketplace (Jakobs, 2003; Updegrove, 2008). For the purposes of this thesis, we are exclusively concerned with standards produced by the World Wide Web Consortium (W3C)¹. Thus, to speak more precisely about the role of W3C standards as apparatuses of internet governance it is useful, to begin by making some important distinctions between different types of standards, including their purpose, mode of production, and effects.

Firstly, when considering different kinds of standards, it is useful to acknowledge the various roles that standards can play. Although almost anything can be subject to standardisation, the *purpose* of standardisation will usually fall into one of three categories; performance, measurement, or compatibility (Russell, 2014). Performance standards specify certain ways of carrying out tasks with the intention of achieving a desired outcome or minimum level of quality. The international standard ISO 140001 for example, specifies a standard process for the implementation of an environmental management system with the aim of generating efficiencies and minimising carbon

¹ In W3C parlance standards are referred to as "Recommendations". A choice of phraseology that acknowledges the organisations own the lack of regulatory power to enforce its standards. For the purpose of this thesis the more widely used term "standard" will be used.

emissions (ISO, 2004). Measurement standards, on the other hand, specify quantifiable units of measurement such as kilograms, centimetres, or watts. In doing so, they make it possible to accurately compare the physical properties of objects or devices such as weight, length or power. Finally, compatibility standards specify interface procedures between discrete technical objects and are typically used to enable interoperability between disparate technical systems. Given that the existence of the web is itself predicated on the capacity of computers and other devices to interface seamlessly, it is perhaps unsurprising that most standards developed at the W3C are designed first and foremost to maximise compatibility (Brunsson & Jacobsson, 2000; Jakobs, 2003; Updegrave, 2008).

In addition to their purpose, standards can also be distinguished by the means of their production. Within the literature three types of standardisation processes are identified; *de facto*, *de jure* and *voluntary-consensus* (Russell, 2014). *De facto* standards are typically produced as a result of common usage or market dominance. Well-known examples of *de facto* standards include the PDF file format, the QWERTY keyboard, and the MP3 audio format, all of which monopolised their respective markets making their use effectively mandatory for producers and users alike (Ghosh, 2011). In contrast to *de facto* standards, so-called *de jure* standards are mandated and enforced by regulatory bodies operating at the local, national or international level and can often involve the use of legal sanction to punish non-compliance. Examples of existing *de jure* standards include various environmental regulations, which set limits for among other things levels of CO₂ emissions or the flammability of building materials. More recently standardisation scholars have also begun to use the term “voluntary-consensus” to describe a third category of standard, produced by informal standards bodies and industry consortia. “Consensus”, is here used to indicate that in contrast to *de facto* standards, voluntary-consensus standards are *intentionally* developed through a cooperative and collaborative process which, in theory at least, is inclusive of all relevant stakeholders. The term “voluntary”

meanwhile is used to denote the fact that unlike *de jure* standards, voluntary-consensus standards are not legally enforceable, and therefore rely on the economic self-interest of stakeholders for their adoption. In the case of W3C, the standards produced can most accurately be described as voluntary-consensus standards, since on the one hand, they are intentionally developed through a structured process but on the other are not enforced by the W3C (Jakobs, Procter, & Williams, 2001; Updegrave, 1995a, 1995b).

Next, while standardisation is commonly understood as a reactive process of selecting one among many existing practices or specifications, standards may also be distinguished by the extent to which their development is undertaken prior to the widespread adoption of a technology or in anticipation of future market requirements or technical innovation. Such standards will typically involve substantial design elements, and therefore often require authors to make normative judgements about the capabilities and features that must be inherited by future systems (Umapathy, 2010; Werle & Iversen, 2006). Anticipatory standards, such as these can thus be more controversial than reactive standards since they require designers to make predictions and normative judgements about how a given technology should develop in the future. While the W3C may occasionally seek to standardise existing technologies, more often than not the work of the consortium involves the development of standards in response to an explicit set of requirements submitted by interested stakeholders. As a result, the majority of standards produced by the W3C can most accurately be described as being anticipatory.

Finally, and perhaps most importantly, standards can also be differentiated by their effects, that is, the extent to which they regulate or merely coordinate the development of new technologies. As discussed above, standards have long been acknowledged to play an important coordinative role in the development of the internet, providing a common set of guidelines by which developers can make their products interoperable and so prevent the fragmentation or monopolisation of the network. As the web has grown in both size and scope, however, processes of standardisation have increasingly become entangled in

matters of public interest that extend far beyond those of mere technical coordination. As a result, standards are today increasingly interpreted as playing an important regulative role in internet governance, restricting or facilitating particular configurations and mediating tensions between order and disorder, freedom and control.

While historically, the vast majority of W3C standards could be described as coordinative, in recent years, there has been an increased awareness of the manifold ways in which the work of the W3C is becoming enmeshed in public policy issues². Thus, though mostly opaque to end-users, the ways in which W3C standards are developed are today increasingly vital to the public interest, mediating civil liberties and impinging upon a wide range of policy issues from the protection of intellectual property rights and national security to the promotion of innovation and digital commerce (Doty & Mulligan, 2013; Russell, 2003; Umapathy, 2010).

As I will argue below, this regulative role of standards raises some critical normative questions about the nature of standardisation processes. To address these questions, however, it is first necessary to place the role of standards within the broader context of internet governance. As such, in what follows, I utilise Yochai Benkler's (1999) layer model of the internet to demonstrate how by virtue of their privileged position within the technical infrastructure of the web, standards can function as effective modalities of control.

The layer model of internet governance

Today internet governance is an increasingly important and crowded field of political research. Despite its popularity, however, the lack of any kind of unitary oversight

² In the late 1990s the W3C created a the "Technology and Society Domain" to explicitly consider matters related to the overlap between standards development and public policy as the domain's mission statement reads: "Working at the intersection of Web technology and public policy, the Technology and Society Domain's goal is to augment existing web infrastructure with building blocks that assist in addressing critical public policy issues affecting the web. Our expectation is not to solve policy problems entirely with technology, but we do believe that well-designed technical tools can lead to policy approaches that are more consistent with the way the web should operate" (W3C, 2015c).

of the web combined with the sheer quantity and diversity of policy issues associated with internet governance, has meant that it has often been difficult for scholars and practitioners to agree on the meaning of the term, much less to demarcate it as a discrete field of inquiry. Attempts to adequately disaggregate the various practices of internet governance have filled volumes, and dozens of taxonomies exist for describing the complex relationships between different stakeholder groups (DeNardis, 2014; DeNardis & Raymond, 2013; Raymond & DeNardis, 2015).

Amongst the most popular and useful of these frameworks is a conceptualisation of the web in terms of several 'layers' of governance organised in a vertical hierarchy (Benkler, 1999; Berners-Lee, 2000; Lessig, 2002)³. Initially developed by Yochai Benkler (1999), the so-called 'layer model' of internet governance, rejects conceptualisations of web as a monolithic unity and instead suggests that the complex arrangements of institutions, technologies and practices should instead be interpreted as being comprised of three distinct layers of governance; the physical layer, the code layer, and the content layer. As Lawrence Lessig (2002, p. 23) describes;

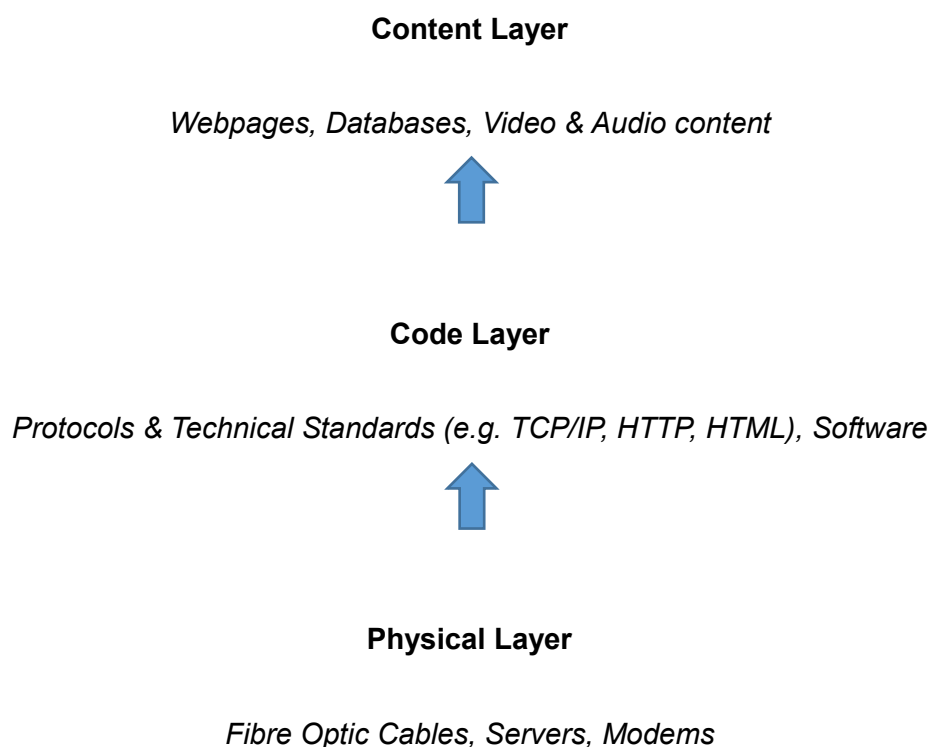
“At the bottom is a ‘physical’ layer, across which communication travels. This is the computer, or wires, that link computers on the Internet. In the middle is a ‘logical’ or ‘code’ layer – the code that makes the hardware run. Here we might include the protocols that define the Internet and the software upon which those protocols run. At the top is a ‘content’ layer – the actual stuff that gets transmitted across the wires. Here we include digital images, texts, online movies and the like.”

³ Benkler's layer model, builds upon Tim Berner-Lee's (2000) earlier four-layer model of internet governance, which was itself a simplified versions of the seven-layer open system interconnection reference model (OSI) commonly used in network architecture design (Zimmermann, 1980). A similar three-layer model has also since been used by Lawrence Lessig (2002).

For Benkler (1999), each of these layers constitutes a distinct domain of governance, intersecting with different kinds of policy issues, involving different stakeholder groups, and as such requiring different modes of governance.

Governance of the physical layer - the vast network of cable, servers, routers and devices that comprise the core infrastructure of the web – is principally undertaken by the governments or telecommunication companies who own the infrastructure itself. Governance at this level will most commonly involve considerations related to the development, maintenance and security of the physical infrastructure, but may also involve attempts to limit or regulate physical access to the network (Benkler, 1999; Lessig, 2002).

Figure 1.1: Layer model of internet governance



Above the physical layer, governance of the code layer⁴ – the complex arrangements of protocols and technical standards which facilitate the exchange of information across the network – is for the most part conducted by a wide array of private transnational multi-stakeholder institutions, including various standards development organisations such as the W3C and IETF (Rutkowski, 1995; Updegrave, 1995a; Weiser, 2001). Most commonly governance of this layer relates to issues concerning the maintenance of technical interoperability and compatibility of technological products. Such work is vital to ensure that the network operates optimally and devices interface seamlessly.

Finally, governance of the 'content layer' – the images, audio, video and text transmitted online – has historically been enacted through the enforcement of well-established national and international laws, including those pertaining to copyright, the distribution of child pornography, defamation as well as any others deemed relevant to the types of content available online. Notably, this layer of governance has in recent years also increasingly been regulated by the policies and terms of use adopted by individual websites and platforms, many of whom, under pressure from regulators have taken a more proactive approach to the monitoring and moderation of their content⁵. Given that the object of governance at this layer is the content of the web itself, the range of policy issues affected by content layer regulation is as one might expect vast, including everything from freedom of expression, decency, piracy, censorship, defamation, competition, cyber-bully and online abuse to name just a few. Furthermore, given that the content layer is that with which users most directly and frequently interact, the mechanisms of governance enacted at this layer including, geo-blocking, terms of service,

⁴ Benkler (1999) uses the term 'logical layer' to describe the layer between the physical and the content layers. Here we have chosen to use the more commonly used term 'code layer' introduced by Lessig (2002).

⁵ The sheer volume of web traffic currently being generated has meant that governments are increasingly unable to effectively monitor national networks, a fact, which in recent years has seen growing attempts by governments to delegate responsibility for identifying and reporting illegal content to internet platforms such as Google, Facebook and Twitter.

and privacy policies tend to be those with which the majority of users are most familiar (Benkler, 1999; Lessig, 2002).

By establishing such demarcated divisions between these three distinct domains of internet governance, Benkler's layer model, on the one hand, enables theorists to disaggregate the various activities and operations of internet governance as well as describe the distribution of roles and responsibilities among the web's many stakeholders. On the other hand, by arranging these domains into a layered array, Benkler's model also acts to demonstrate how the regulation of each layer is deeply connected. Specifically, by arranging these layers hierarchically, Benkler shows how it is possible to govern the internet vertically such that regulation introduced at one layer is effective in all layers above. Put another way, by highlighting the reliance of the content layer on the viability and functionality of the code and physical layers above it, Benkler demonstrates how despite their apparent mundanity, these layers can operate as effective mechanisms of content control (Benkler, 1999). Thus, in addition to providing a useful taxonomy of the various aspects of internet governance, the layer model also highlights the way in which material infrastructures can operate as powerful regulatory modalities, restricting or facilitating particular configurations and mediating liberty and freedom online⁶ (DeNardis, 2011; Morris, J. & Davidson, 2003).

Until recently, the best-known examples of layer-crossing regulation have occurred at the physical layer. Most notably in Burma and China, where tight regulation of access points and cross-border servers respectively have been used to restrict access to online content (Solum & Chung, 2003). In recent years, however, there has been a growing recognition

⁶ In part this emphasis on the importance of material infrastructure can be viewed within the context of a broader 'material turn' within the field of Politics and IR, which seeks to investigate the mediating and constitutive role of artefacts in the creation and shaping of networks, tracing the complex ecologies of human and non-human relations inherent within social phenomena (Aradau, 2010; Coward, 2012). Such approaches argue Bowker and Starr (1996, p. 197), 'necessitate an inversion of our common sense notion of infrastructure... taking what have often been seen as behind the scenes, boring, background processes to the real work of politics and knowledge production and bringing their contribution to the foreground'.

of how the code layer also regulates. As with governance of the physical layer, interventions at the code layer are effective vertically, meaning that control over standards and protocols can be used to exert influence over a wide range of policy issues usually associated with the governance of the content layer, including; freedom of expression, access to knowledge and privacy. Unlike regulation enacted at the physical layer, which may vary by jurisdiction, the inherently universal nature of technical standards and protocols mean that measures enacted at the code layer can often have effects that scale globally.

This notion of code as a regulatory modality was famously captured by Lawrence Lessig (2009) in his much-quoted maxim 'code is law'. For Lessig, code is the architecture of the digital. In much the same way that architecture can facilitate or constrain our actions in the material world, the ways in which code is written can dramatically influence the freedoms and choices we have in cyberspace. As Lessig (2000, p. 4) himself described:

'This code, or architecture, sets the terms on which life in cyberspace is experienced. It determines how easy it is to protect privacy, or how easy it is to censor speech. It determines whether access to information is general or whether information is zoned. It affects who sees what, or what is monitored. In a host of ways that one cannot begin to see unless one begins to understand the nature of this code, the code of cyberspace regulates'.

Within the literature on standardisation, discussions concerning the regulatory effects of standards, have until recently been primarily confined to questions regarding the potential effects of a standard's openness on issues such as innovation, interoperability and competition. It is commonly observed, for example, that standards which are openly published and which can be freely implemented are more likely to generate greater levels of innovation and competitive markets for technologies since companies and entrepreneurs can develop products based on those standards without fear of infringing

patents. Conversely, it is argued that standards which are not published freely or which are encumbered with intellectual property restrictions may create barriers to innovation as well as trade in global markets (DeNardis, 2011).

Although the effects of standards on innovation and marketplace competition are undoubtedly significant, as the web has become ever more enmeshed in the everyday lives of users there has been a growing recognition of the ways in which standards also impact a wider range of policy issues such as safeguarding and privacy. The W3C's Platform for Internet Content Selection (PICS) standard for example, was developed to enable parents and guardians to control what content their children access online by allowing the authors of web pages to self-label the age appropriateness of their content. At the time of its development, the standard was seen by many as a direct response to the passage of the Communications Decency Act (CDA) by the U.S. Congress as well as broader public and regulator concerns about the lack of parental controls online. In a more recent example, the Platform for Privacy Preferences Project (P3P), which enables websites to specify the intended uses of information they collect about web browser users, was developed by the W3C amid growing concerns about the abuse of personal data by advertisers.

Together these examples, are demonstrative of a growing trend of what Nick Doty and Deirdre Mulligan (2013) term 'techno-policy standards' – that is, standards which as a consequence of their design and implementation, display substantive public policy implications. While historically only a small minority of the multitude of standards produced annually can be said to exert a significant impact on public policy, the recent growth of the web as a social and political space means that the potential policy implications of 'techno-policy standards' are only likely to increase.

While techno-policy standards offer an efficient and effective means of achieving specific public policy objectives without the need for intrusive government regulation, theorists

note how the pursuit of policy goals by technical means also raises a number of significant concerns regarding the legitimacy of the technical bodies that preside over their development (Werle and Iversen, 2006).

Firstly, unlike traditional nation-state policy-making processes, which typically receive an extensive public hearing, the technical and esoteric nature of these forms of technological enforcement place development processes beyond the comprehension of most casual users and so necessarily preclude them from broader participation or scrutiny. As Susan Struble put it, “Standards are invisible, they are shadow policymaking, shadow governance” (as cited in Ermert, 2007). Indeed, while Benkler himself acknowledges that the nation-state continues to play an important role in many aspects of internet governance including, for example; the enactment of privacy laws, regulation of anti-trust and enforcement of statutes related to information policy, contrary to the concerns of Barlow’s and his contemporaries, national governments are nevertheless viewed by many scholars as increasingly peripheral to the day-to-day governance of the web (Benkler, 1999). Instead, control over almost all aspects of technical governance from the maintenance of critical internet resources such as the DNS to the development of web standards is today mostly handled by networks of private companies and other non-state entities. These transnational institutions of private ordering operate beyond the parameters of traditional nation-state bureaucracy. As such, they are not accountable to an electorate, nor bound by the same commitments to democratic standards of openness or transparency as national policy-makers⁷.

Secondly, unlike other forms of policy-making, whose legislative outputs may be reformed or nullified as new evidence comes to light, scholars observe how technological measures

⁷ Their positioning at the nexus of technology and policy means that informal standards bodies such as the W3C can appropriately be conceptualised as what David Guston (2001) described as ‘boundary organisations’.

often exhibit a certain obduracy, imposing through their material intransigence, the discrimination of their design for generations or as Bruno Latour put it, 'technology is society made durable' (Latour, 1990). In the case of standardisation, in particular, commentators note how technical standards can have a naturally conservative momentum, such that once they are implemented, they can be difficult to dislodge. As Bowker and Starr (1996, p. 197) observed, 'there is no natural law that the best (technically superior) standard shall win - the QWERTY keyboard, lotus 123, DOS and VHS are often cited in this context. Standards have significant inertia and can be very difficult to change'.

Taking each of these points into consideration, in recent years scholars have begun to raise questions regarding the legitimacy and openness of standards development processes as well as the fidelity of techno-policy standards to the public interest (Morris, 2011; Haplin, 2013). How these normative questions should be addressed, however, will depend primarily upon how the power of standards is conceptualised. Although, the political and economic importance of standards has been widely acknowledged, within the literature most accounts of standardisation nonetheless remain mostly agnostic on the question of how politics becomes embedded within standards themselves; often treating their regulatory effects as the inevitable product of technical efficiency (Harbers, 2005; Wyatt, 2008). To address the normative questions raised by techno-policy standards, therefore, it is first necessary to develop a more nuanced understanding of the relationship between technology and society. Developing such an understanding will, I argue, help us to comprehend the political agency of standards better, and thus help to inform our discussion of the procedural quality and legitimacy of standards development processes.

In what follows I examine some of the various ways in which the relationship between technology and society has been conceptualised. Drawing on literature from the field of

Science and Technology Studies (STS), I reject both social and technological determinist accounts of technological development and instead argue for an understanding of technical artefacts as being co-produced. In doing so, I argue studies of the legitimacy of standards bodies should focus on the role of proximate designers during the design phase of standardisation.

Do standards have politics?

The notion that 'code is law' has been widely accepted within the field of internet studies (Lessig, 2009). However, this recognition, how the power of code can be conceptualised remains an open question and has been largely underexplored within the literature. All too often standards and protocols are treated as the straightforward application of scientific rationality to technical problems. As such they are often interpreted as developing in-line with an objective logic of technical efficiency irrespective of their social or political context. In part, of course, this form of essentialism is not unique to the field of standardisation, but is, in fact, reflective of a much broader trend of technological determinism that has dominated public and academic perceptions of technological development and ICT more generally for most of the past century (Ellul, Wilkinson, & Merton, 1964).

By treating technology as a 'black-box'- that is, as an independent variable that can be used to explain social or political phenomena, but which is itself taken for granted or exempted from further analysis - such accounts of technological development are usually divorced from studies of how and why particular technologies are created. Furthermore, by linking the pace of technological developments to the relative progress of scientific knowledge, such vague instrumentalist and determinist theories of technology only succeed in presenting us with a narrow ontological slice of the technological design process, and as such, prevent us from analysing the historical and political situatedness of technologies or the controversies surrounding their design and implementation. As

Langdon Winner (1986, p. 21) jested, 'those who have not recognised the ways in which technologies are shaped by social and economic forces have not gotten very far'.

In order to develop a response to the normative questions raised by the development of techno-policy standards, here it is argued that accounts of standards and standardisations cannot simply stop with the realisation that code has political consequences, but must also seek to unveil the political and social tensions and contingencies hidden beneath the apparent objectivity of their design. As Janet Abbate (1994, p. 10) observed,

'network design decisions have never been purely technical or purely social. System builders choose techniques on the basis of their perceptions of technical and economic constraints, as well as their own tacit or explicit social goals. Understanding the history behind the networks we use today can help us evaluate and participate in the choices that must be made in building networks for the future'.

Emerging partly in response to technological determinist approaches to technology, Science and Technology Studies (STS) has over the past 40 years developed into a fertile field of study, seeking to better explain the powerful role of technology in society through the careful examination of the processes innovation and design. Initially emerging out of the Sociology of Scientific Knowledge (SSK), STS sought to draw attention to the role of social experience and practice in the development of 'objective science', through the study of the 'social world' of scientists in laboratories (Jasanoff, 2004b; Latour, 2005; Pinch & Bijker, 1984). The 1970s saw the expansion of the field to include the analysis of social aspects of technological innovation and development, since which time, STS has continued to develop strategies to investigate the social and cultural processes that shape the design, production and implementation of technology (Bijker & Law, 1992; Hughes, 1994; Pinch & Bijker, 1984; Winner, 1978).

Taking as their point of departure a rejection of the essentialist ontology of deterministic accounts of technology, STS adopts a broadly constructivist ontology interpreting technology as embodying and internalising the values and norms of the social and political context of its creation. In doing so, STS theorists seek to move beyond the claims of objectivity and universality offered by traditional philosophers of technology, to an understanding of technology as a complex historically and culturally situated process⁸.

Having formulated this as their point of departure, another series of important questions present themselves. For example, if technological artefacts can be said to be reflective of the interests, norms and ideologically commitments of their designers, then who can be said to be involved in the design process? At what level (micro, meso, or macro) are these 'inscriptions' made and to what extent are they 'interpretively flexible'? Modern standardisation processes, typically take place over an extended period, involving a broad range of actors operating at different levels and phases of development, from the initial design and development of the standard through to its implementation and use. Developing a conceptual understanding of how technical standards come to be political, therefore, is crucial to determining the stage at which any analysis of processes of standardisation should focus.

A review of existing STS literature on technological design, reveals a broad range of perspectives on the politics of technology, from those who view proximate designers as the principal arbiters of the design process; to those who emphasise the role of negotiations between 'relevant social groups' and those who see design as a function of broader cultural and historical factors (Bijker et al., 2012). While all approaches share a

⁸ Although some branches of STS have in the past strayed dangerously close to what might be called social determinism, most maintain an understanding of society and technology as being 'co-produced'. From this perspective technology both 'embeds and is embedded in social practice, identities, norms, conventions, discourses, instruments, and institutions – in short, all the building blocks of what we term the social'(Jasanoff, 2004a, p. 3). By taking this approach, theorists are able to avoid the extremes of both technological and social determinism, recognising the ways in which technologies reflect social norms and practices while also acknowledging their consequentiality.

constructivist ontology, they nevertheless differ in the temporal frame and granularity of their analysis, and as such offer slightly different answers to the normative questions raised by the development of techno-policy standards.

Firstly, the Social Construction of Technology perspective (SCOT) takes a broad view of the politics of technology, emphasising the fluid and transient nature of technical artefacts as well as the importance of social context and interpretation. Much influenced by the 'Strong Programme' of the Sociology of Scientific Knowledge (Bloor, 1981; MacKenzie, 1981), the SCOT perspective, became popularised in the 1980s, and today remains the most popular and well-known approaches to the politics of technology within STS (Bijker, 1997; Pinch & Bijker, 1984).

For many SCOT theorists, the micro-level focus of the intentionalist perspective on the individual interests of proximate designers neglects how, despite their material intransigence and intentional design, the social implications of technologies are often dependent upon their adoption and use within a specific social and cultural context. For them, neither the symbolic meaning nor the practical application of an artefact is ever fixed but is rather continually reinterpreted and renegotiated by competing social groups. Thus, like the sociology of science - which through its exploration of the social world of laboratories drew attention to the role of culture in the production of "objective" science – SCOT theorists seek to unpack the so-called 'black boxes' of technological systems (Bijker et al., 2012; Pinch & Bijker, 1984).

By studying 'relevant social groups' – actors involved in the design and use of technologies, often embodying specific interpretations of those artefacts – SCOT scholars aim to demonstrate how the perceived symbolic meanings and applications of technologies are dependent, as much on the social context into which they are embedded, as the narrow interests of proximate designers or the intrinsic materiality of the technology itself. For SCOT, in spite of their purposeful design and material longevity, the

set of cultural meanings associated with technologies in the early stages of their development are in a state of continuous flux as political, social and economic conditions change and as the technology is interpreted differently by diverse audiences or what SCOT theorists call, 'interpretive flexibility' (Bijker et al., 2012; Bijker & Law, 1992; Pinch & Bijker, 1984)⁹. According to the SCOT perspective, the design process does not cease because the artefact achieves some 'objective' standard; instead, technologies become stabilised through the resolution of controversies between competing social groups. This process of 'closure' gradually diminishes the interpretive flexibility of the technology in question, solidifying it in its final form (Bijker et al., 2012).

Since its popularisation in the 1980s, many theorists have sought to augment and extend the insights offered by SCOT. The most notable of these has been Andrew Feenberg (1991; 2000), whose synthesis of SCOT with critical theory emphasised the role of broader cultural values and practices rather than relevant social groups in the shaping and adoption of new technologies. As Feenberg himself put it, 'our focus is less on specific social groups or the strategies they employ, and more on what cultural resources (i.e., values and practices) were brought into play in the design of a specific technology' (Feng & Feenberg, 2008, p. 111).

Together these macro approaches to the politics of technology, attempt to draw attention away from the micro-practices of technological development to a much broader perspective that examines the contrasting ways in which technologies are interpreted and given meaning within a particular socio-cultural context. In adopting such an approach, researchers seek to look beyond the initial design phase to examine the ways in which

⁹ These ideas were illustrated in Bijker's classic example of the development of the modern bicycle. Bijker shows how during the early stages of its development, a number of different designs competed for the public's acceptance, each representing a different interpretation of the possibilities that the bicycle offered; from an exciting new sport to a vehicle for "proper" ladies. These users formed 'relevant social groups', each of whom had their own understanding of how a bicycle should be used and the nature of the problems to be solved (Bijker, 1997). Bijker then demonstrates how these interpretations informed the further development and refinement of the bicycle's design, ultimately leading towards the creation of the bicycle we know today.

technologies are implemented and used. In particular, they seek to demonstrate how despite the intentions of designers, the politics and effects of a given technology may vary within different contexts.

Such accounts of the relationship between society and technology have been incredibly influential within the field of STS and undoubtedly have much to tell us about the politics of technology. However, for the purposes of studying processes of standardisation the utility of such macro approaches is less clear since standards are by their very nature resistant to contextual interpretation. Indeed, although every phase of standardisation, from design, through to implementation, and use, is in some way relevant to the overall public interest implications of a given standard, standardisation scholars note that standards often exhibit a 'conservative momentum' such that, once created the effects of a standard can be difficult to change. John Morris (2011, p. 9) for example, observes how web standards can typically take anywhere between 18 and 36 months (or longer) to reach maturity, by which point 'legislative or regulatory fiat cannot inject into a service or product technical capabilities that were not designed in the first place, and can often at best only restart a lengthy standards design process'. Using the terminology of STS, therefore, standards are by their very nature 'interpretively inflexible', that is they are prescriptive and reach a high level of closure before the implementation or use phase of their development. For Morris and others, therefore, any attempt to inject public interest into the standards must be made at an early stage, since, as Morris (2011, p. 9) notes, 'in many cases, post-design regulation is powerless to put a harmful technological genie back in the bottle'.

Given their inherently immutable nature, a more accurate interpretation of the power standards may be found in an alternative account of the politics of technology, sometimes referred to as the 'intentionalist' perspective. In contrast to SCOT and other macro approaches, intentionalist scholars emphasise the role of proximate designers or "system builders", that is, those individuals or organisations directly involved in the design and development of a given technology at the initial design phase (Feenberg, 1991; Harbers,

2005; Hughes, 1994). While acknowledging that design decisions may be constrained by economic or technical factors, intentionalists ascribe strong intentionality to designers themselves, insisting that the social effects of technical artefacts will to a greater or lesser extent reflect the intentions of those most closely involved with their development (Winner, 1980).

This perspective on the politics of technology was perhaps most famously illustrated by Langdon Winner's (1980) example of city planner Robert Moses' plan to construct overpasses connecting New York and Long Island. Winner recalls how the initial design of the overpasses led to them being constructed too low to permit public buses to pass beneath them. In doing so, the design of the underpasses acted to effectively prevent poor working class families from accessing the beaches of Long Island, and so had the effect of reinforcing existing social inequalities in the city, an outcome which for Winner, was consistent with the racial prejudice and elitist intentions of Moses.

Considering the importance intentionalists ascribe to the role of proximate designers, such a perspective inevitably leads researchers to carefully examine the design phase of a given technology's development. As Winner put it, any critical examination of technological design processes using an intentionalist perspective requires 'a rigorously critical perspective and normative commitments that enable analysts to identify not only social processes that negotiate and shape technology, but also first, which technological choices are actually made and implemented, and second how members of democratic societies can participate and intervene in those choices' (cited in Lievrouw, 2014, p. 28).

Given the importance of the design phase of standardisation, the focus of the intentionalist approach on the role of proximate designers makes it particularly useful for conceptualising the power of technical standards. As such, while not dismissing the importance of competing socio-cultural interpretations of standards at the implementation or use phases, this thesis will adopt an intentionalist perspective to technological

development, which seeks to analyse the practices and processes through which standards are developed and designed.

Such an approach will on the one hand, of course, involve engagement with a range of descriptive questions including, for example, who are the designers? What are their interests or intentions? How are these expressed within the process? At the same time, however, in attempting to unpack the 'black-box' of standards development, this research will also seek to address the inevitable range of normative questions which follow from such an analysis, including for example, to what extent are the views of all relevant stakeholders included as part of the process? Does the process achieve consensus? To what extent is the outcome consistent with the values of those affected?

Conclusion

Lawrence Lessig (2000, p. 1) once observed that;

'Our choice is not between "regulation" and "no regulation." The code regulates. It implements values, or not. It enables freedoms, or disables them. It protects privacy, or promotes monitoring. People choose how the code does these things. People write the code. Thus the choice is not whether people will decide how cyberspace regulates. People--coders--will. The only choice is whether we collectively will have a role in their choice--and thus in determining how these values regulate--or whether collectively we will allow the coders to select our values for us'.

In taking as its premise the dual claim that standards are political and that this politics is reflective of the values and intentions of their proximate designers, this thesis seeks not only to describe the technical and political processes through which the W3C develops techno-policy standards but also assess the extent to which those processes can be said

to be legitimate and appropriate for the arbitration of public policy disputes.

If as a consequence of their highly contested and political nature, standards bodies are in need of legitimation, however, then this raises the question of how this legitimacy be conceptualised in the context of standardisation? What sorts of institutional arrangement could be considered appropriate for the development of techno-policy standards and what sorts of metrics could be used to assess this? These are the questions that I will address in the next three chapters.

2. “Rough consensus and running code”: Conceptualising the legitimacy of web standards consortia

‘We reject: kings, presidents and voting. We believe in: rough consensus and running code’.

David D. Clark (1992)

For much of the past century, the legitimacy of technical standards bodies - to the extent that they have been considered to require legitimacy at all – has most commonly been interpreted in terms of the technical quality of their substantive technical outputs. However, as awareness of the political effects of standardisation has increased, expectations regarding the forms of legitimacy that standards bodies are expected to enact have begun to change. While historically, the pursuit of narrow technical objectives such as interoperability has been uncontroversial, the pursuit of policy objectives such as privacy, security or user rights through the development of techno-policy standards has proved to be far more contested. In the absence of consensus on the values that should be reflected in standards, scholars observe how standards bodies must today not only demonstrate legitimacy in terms of the quality of their technical outputs but also in terms of the rigour, openness and transparency of their procedures (Fuchs et al., 2011).

Over the past two decades, the development processes of consortia-based standards organisations have been characterised by a so-called ‘rough consensus and running code’ approach to standardisation, which emphasises the importance of informal discussions and meritocratic decision-making practices. For some, these deliberative and consensus-led processes have come to be regarded as exemplars of effective self-governance and legitimate multi-stakeholderism in practice (Froomkin, 2003; Russell, 2003, 2006). For critics, however, questions remain regarding the inclusivity of standards development processes as well as the willingness and capacity of technocratic

organisations to adequately consider the public policy implications of their work (Halpin, 2013; Malcolm, 2013; Morris, 2011).

Despite growing academic interest in practices of standardisation, the legitimacy of standards consortia remains under-theorised. To address this gap in the literature, this chapter examines how the legitimacy of the 'rough consensus and running code' approach to standardisation adopted by informal web standards consortia, such as the W3C, may be best conceptualised using existing theories of transnational legitimacy.

I begin the first section of the chapter, by distinguishing between the informal, deliberative and consensus-driven processes of the standards consortia – which will form the subject of this study - and the more formalised processes of 'official' standards development organisations (SDO). Following a brief review of major theoretical approaches to transnational legitimacy, I present the case for a normative approach to assessing the legitimacy of web standards consortia, which emphasises the need for standards bodies to demonstrate *both* substantive legitimacy (output) and procedural legitimacy (input/throughput). Given the highly decentralised and transnational nature of web standards development, I note how standards consortia such as the W3C tend to be resistant to analysis using conventional aggregative theories of procedural legitimacy. As such, in order to adequately analyse the procedural legitimacy of web standards consortia, I argue in favour of an analytical approach inspired by deliberative democratic theory, whose sensitivity to the legitimising potential of informal deliberative practices, makes it uniquely well-suited to conceptualising the legitimisation claims of contemporary web standards bodies.

In the second half of the chapter, I highlight some of the parallels that previous studies have drawn between web standardisation and deliberative theory. While I am sympathetic to the views of those commentators who have heralded standards consortia as exemplars of deliberative democratic governance in practice (Froomkin, 2003), I begin the final

section of the chapter by highlighting a number of concerns raised by scholars who have questioned the extent to which standard consortia can realistically be expected to satisfy the high normative standards prescribed by deliberative theory (Morris 2011; Malcolm, 2013). In particular, I observe how concerns regarding the inclusivity of standards processes as well as the willingness and capacity of standards bodies to address issues of public policy, have led some commentators to criticise the legitimacy of consortia-based standardisations and their role of standards bodies in the development of techno-policy standards. In order to examine the validity of these critiques empirically, I conclude by arguing for the need to develop an analytical framework which is capable of assessing the procedural legitimacy of the W3C from a deliberative perspective.

Standards Development Organisations and Standards Consortia

Today web standards are developed in a largely piecemeal fashion by a bewildering array of technical bodies which together comprise the modern web standards ecosystem (Hawkins, 1999). Although this panoply of organisations plays a crucial technical role in the practice of internet governance, currently no singular formal definition of a web standards development organisation exists, and in practice, the term covers a broad range of institutional arrangements. Some standards organisations, for example, focus predominantly on the development of technical specifications, while others concentrate on improving the usability and interoperability of existing standards. Some aim to formalise existing practices or promote the adoption of specific technologies, while others focus more on education and training. Equally, while the processes of some standards bodies are open to the public, others may choose to operate behind closed doors, and while many standards organisations actively encourage grassroots participation, others require members to pay membership fees in order to participate (Hawkins,1999).

Despite the diversity of approaches to standards development, the literature on

standardisation usually distinguishes between two main types of international standards organisation; official standards development organisations (SDOs), whose work is often formally recognised and supported by national governments, and informal standards organisations or 'standards consortia' - informal alliances of firms, organisations, and individuals, financed by membership fees. Although SDO's and consortia share the objective of coordinating technological development with emerging market demands, these competing models of standardisation are nevertheless commonly seen to represent two irreconcilable political cultures of standards development, reflecting, as Drake (1993, p. 643) put it, radically divergent 'visions of how international standardisation processes and network development should be organised and controlled'¹.

As 'official' standards development organisations, the work of bodies such as the International Organisation for Standardisation (ISO), International Telecommunication Union (ITU), and the European Committee for Standardisation (CEN) is sanctioned and supported by national governments. As a result, SDOs are commonly characterised by highly ridged and democratic procedures, designed to reflect prevailing liberal democratic notions of legitimacy and satisfy national stakeholder demands for openness, equitable representation and due process (Bunduchi, Williams and Graham, 2004; David and Shurmer, 1996; Iversen, Vedel and Werle, 2004). David and Shurmer (1996), for example, note how, official SDOs share a number of common rules and characteristics intended to ensure that standardisation serves the 'public interest', including free and equal access to discussions, public circulation of draft recommendations for wider comment, requirements for non-exclusive licensing of proprietary technology at reasonable fees, and restrictions

¹ While this thesis maintains that there are crucial procedural differences between formal SDOs and informal standards consortia, it is nevertheless important to note that the rise of the private consortia during the last decades has led to a number of SDO's to reform their procedures in attempt to adjust to the new market conditions in which they operate (David & Shurmer, 1996). According to Bunduchi (2004, p. 5) such reforms include, 'procedural changes, for example, the streamlining and strengthening of support functions, the development of new modes of inter-organisational coordination and cooperation such as arrangements between SDOs and private consortia, and the introduction of new mechanisms for conflict resolution'.

on the use of monetary payments to secure consensus.

Iversen, Vedel and Werle (2004) meanwhile, observe how most international SDOs follow a very simple principle of territorial representation², with participation in technical committees carefully managed in order to ensure a balanced representation of relevant stakeholders, including members of national and regional standards bodies as well as representatives of national governments, who act primarily in the interests of their own national telecommunications and computing companies. The management of the process in this way means that SDOs have often been compared to liberal democratic institutions, with standards usually allowed to progress along the standards track only after several stages of formalised voting procedures (Iversen, Vedel, & Werle, 2004; Jakobs, 2003; Werle & Iversen, 2006). Thus, as Kai Jakobs (2005, p. 95) put it, 'the procedures of the formal standards bodies embed democratic values and reflect the desirability of a technically and politically neutral standards process'.

Importantly, however, the same rules and procedures which help to ensure that the standards produced within 'official' channels are internationally recognised as legitimate also mean that SDOs are typically bureaucratic and so often fail to respond quickly to market developments. Since the late 1980s and early 1990s, the limitations of formalised SDO processes have become increasingly apparent, as the accelerating pace of innovation within the ICT sector has rapidly increased the demand for new standards (Blind, Gauch and Hawkins, 2010; Updegrove, 2008). Within this context, many vendors have grown increasingly disillusioned with the arcane and ritualised processes of traditional SDOs, leading a substantial number of firms in the telecommunication, consumer electronics and media industries to pursue their standards work outside of traditional standards regimes (Updegrove, 2008). As a result, the web standards ecosystem has over the past 20 years witnessed a rapid proliferation of informal

² Voting within formal SDO's is commonly organised around the principle of 'one-nation, one-vote' or other nation-based weighted voting decision rules (Iversen, Vedel & Werle, 2004).

standards consortia which, for many vendors, offer more commercially orientated solutions to standardisation³.

In contrast to 'official' standards, the technical specifications produced by consortia and other informal standards organisations, generally lack any formal or regulatory status. As a result, consortia themselves are typically subject to far less scrutiny than their SDO counterparts and are thus more willing to adopt flexible and pragmatic approaches to standards development (Cargill 2002; Hawkins, 1999; Russell, 2014; Updegrave, 1995a).

Firstly, Hawkins (1999) observes, how unlike the restrictive system of balanced territorial representation adopted by formal SDOs, the memberships of most consortia are typically comprised of comparatively small groups of like-minded stakeholders, who coordinate and cooperate voluntarily in order to achieve common technological objectives. Since participation is voluntary, membership of an organisation typically implies agreement with its technical or strategic objectives. As a result, the range of actors involved in consortia-based standards development tends to be much smaller and more homogenous than formal SDO's, limiting the array of technical and commercial interests involved and thereby enabling agreement regarding technical specifications to be reached more quickly and efficiently (Cargill, 2002; Hawkins 1999).

Secondly, Domanski (2015) notes how in contrast to the ridged and democratic procedures of formal standards bodies, most consortia - including most notably the IETF and W3C – tend to be characterised by what Clarke (1992) termed a “rough consensus and running code” approach to standards development, which privileges informal deliberation and rigorous testing over bureaucratic voting procedures.

³ Between 1986 and the year 2000, the number of significant ICT consortia rose from a mere handful to around one hundred. While individual consortia may merge or dissolve as technology and the marketplace evolves, at the time of writing there remain at least 20 consortia that can still be considered as exerting significant influence over the development of ICT products and services internationally (Hawkins, 1999). Examples of some of the most importance and influential web standards consortia include; OMG, IETF and the W3C.

From a pragmatic perspective, this flexible approach to standardisation allows engineers to progress specifications along the standards track more quickly and efficiently, with working group chairs often empowered to judge when deliberations have yielded adequate levels of 'rough consensus' without the need to refer to a centralised authority or abide by a bureaucratic approval process (Moody, 1997). Conscious of a desire not to unnecessarily slow the process of the standardisation through the kinds of protracted and ponderous democratic procedures that so often hamper formal standards bodies; consortia usually interpret 'rough consensus' as having been achieved in circumstances where a proposal has demonstrated broad support from the community, without necessarily achieving unanimous approval (Crocker, 1993). By taking this approach, Chairs seek to ensure that while proposals are subject to appropriate levels of discussion and scrutiny; otherwise widely supported specifications are not unduly delayed by the intransigence or objections of a small minority of participants.

As a consequence of these procedural efficiencies, Russell (2014) observes how since the early 1990s, consortia with their 'affinity for late-night bar meetings [and] informal hallway conversations' have succeeded in inverting 'the stiff diplomacy and representative democracy embodied in the formal procedures of venerable national and international bodies', offering instead a pragmatic approach to standardisation more well attuned to the needs of commercial actors and the realities of an ever-changing technological marketplace (Abbate, 2010; Kiesler, 2014; Russell, 2006). As a result, consortia have over the past two decades consistently outperformed their SDO rivals, and are today firmly established as the preferred means of standards development for most web technology vendors (Egyedi, 2003; Hawkins, 1999; Pohlmann, 2013).

In addition to establishing the predominance of consortia as the preferred means of web standardisation, the apparent triumph of 'rough consensus and running code', has also had the effect of generating sustained interest in consortia-based standardisation as a model of effective multi-stakeholder governance. In his influential book *Code*, Lawrence

Lessig (2009, p. 4) described Clarke's mantra of 'rough consensus and running code' as 'a manifesto that will define our generation'. Others meanwhile have been eager to present the IETF, W3C and other informal standards bodies as paragons of legitimate internet self-regulation, with some scholars, even heralding them as contemporary examples of deliberative democratic governance in practice (Berners-Lee, 2000; Carpenter, 1996; Froomkin, 2003; Lehr, 1995).

For critics, however, the rise of consortia-based standardisation raises a number of serious concerns regarding the legitimacy of techno-policy standards. Schoechle, (2003) for example, observes how the restrictive membership requirements of some standards consortia, often act to exclude civil society groups who cannot afford membership fees leading to standards processes which are typically less inclusive and transparent than those of more formal standards bodies. Halpin (2013) meanwhile argues that pressure on consortia to pursue commercial objectives undermines their willingness to acknowledge or engage with the public policy implications of their work. Finally, scholars such as Davidson et al., (2002) question the current procedural capacity of technocratic bodies such as standards consortia to host the kinds of broad-ranging and in-depth policy discussions necessary to legitimise the development of techno-policy standards.

Despite these concerns, the 'rough consensus and running code' ethos which underpins the standards processes of many consortia including the W3C, remains remarkably under-theorised and to date, surprisingly little scholarly attention has been dedicated to the studying the legitimacy of consortia-based standardisation⁴. To address this gap in the literature, in what follows I provide a brief overview of competing approaches to conceptualising the legitimacy of transnational technocratic forms of governance and

⁴ Given their official status, there already exists a much more well established literature on the legitimacy of formal standards organisations (Buthe and Mattli, 2011). To date most of the literature on consortia-based standardisation has been dedicated to explaining the reasons behind the existence of consortia rather than to questions concerning their legitimacy (Hawkins 1999; Updegrave, 1995a, 1995b).

discuss how these may be used to conceptualise the legitimacy of web standards consortia. In doing so, I will argue in favour of a normative approach to assessing the legitimacy of informal standards bodies which emphasises the need for a balance between both substantive (output) and procedural (input/throughput) aspects of legitimacy.

Normative and Empirical Legitimacy

The questions raised by the proliferation and growing influence of standards consortia are by no means unique to the field of internet governance. Since the 1970s, global politics more broadly has witnessed a gradual displacement of political power and authority away from the traditional governing institutions of the territorially bound nation-state and towards international organisations as well as new transnational networks of private ordering (Beck, 1992; Dingwerth, 2007; Habermas, 2001; Held, 1995, 1999). Most notably, of course, this has included the increased importance of intergovernmental bodies such as the EU, WIPO, IMF, WTO, and the UN but in recent years, has also involved a far more prominent role for other more informal forms of transnational technocratic governance including privately led networks, such as standards bodies (Hahn & Weidmann, 2016; Kica & Bowman, 2012; Marres, 2007; Take, 2012b)⁵.

Despite the recognition of this trend of displacement as far back as the early 1970s, until

⁵In his 1986 book *Risk Society*, German sociologist Ulrich Beck describes this transition of power away from the nationally bounded bureaucratic state to more informal transnational arrangements of governance as a process of “*Entgrenzung*” – the becoming unbounded of politics. For Beck, this phenomena can be interpreted as part of a much broader structural reorganisation of late modern societies as a whole, caused in part by the inability of national-state institutions to adequately manage the complex and transnational, environmental, technological, social and economic challenges of post-industrial societies (1992). These issues, Beck argues, transcend the boundaries of national political institutions, calling into question their suitability and necessitating their replacement by more reflexive transnational institutions capable of handling the complex and technical challenges created by globalisation (Beck, 1992; Habermas, 1975). Habermas similarly described this decline in the confidence of the administrative functions of institutions as a *Legitimation Crisis* (Habermas, 1975).

quite recently, International Relations theorists have tended to depict these institutions as either “epiphenomenal” and entirely dependent on state power, or simply as benign facilitators of international cooperation, created by nation-states to serve their interests or overcome problems of collective action (Blake, 2012; Nagel, 2005). Theorist Thomas Nagel (2005, p. 113), for example, argues that the nation-state is the sole “locus of political legitimacy”, while transnational institutions, by contrast, should be considered merely as “voluntary association[s] or contract[s] among independent parties” that do not claim “political legitimacy and the right to impose decisions by force”. Michael Blake (2012, p. 280) similarly insists that since transnational institutions are not engaged in “direct coercion against individuals” they do not generate the same political justificatory demands as national governing institutions, and as such do not require the same levels of legitimation’.

More recently, however, the growing recognition of the ways in which transnational technocratic institutions are performing important regulatory functions independent of the power of the nation-state, has led an increasing number of scholars to view transnational organisations not merely as the benign facilitators of nation-state cooperation, but increasingly as political agents whose authority and power, is itself in need of legitimation and justification (Barnett & Finnemore, 2004; Buchanan & Keohane, 2006).

However, at the same time that the increased regulatory role of transnational institutions has generated demands for legitimacy, scholars note how their decentralised and privatised nature means that they tend to fit awkwardly into traditional nation-state and social contract based theories of legitimacy, premised on a fixed and identifiable demos as well as direct accountability between decision-makers and their constituents (Raymond & DeNardis, 2015; Take, 2012a, 2012b)⁶.

⁶ Traditionally the concept of legitimacy has been discussed predominantly within the confines of the modern liberal bureaucratic state. In this setting, authority and legitimacy are generally said to arise from the expressed or tacit consent of the governed; who acting in their own self-interest

On the one hand, the liberal conceptualisation of legitimacy in terms of a direct consensual relationship between the centralised coercive authority of the state and its citizens is premised on the capacity of governing institutions to aggregate the preferences of their constituents accurately. In the context of the nation-state, this can quite straightforwardly be achieved through a formalised electoral process involving a constitutionally and geographically defined *demos*. At the transnational level, however, scholars observe how determining the range of stakeholders who should be involved in decision-making processes can be more difficult, either because of the uncertainty over whose preferences should be included, or alternatively because the mechanisms of aggregation such as voting and elections are resistant to translation to a transnational context (Bohman, 2005, Dingwerth, 2007; Steffek & Hahn, 2010; Uhlin, 2010)⁷.

On the other hand, the lack of formal mechanisms of democratic governance at the transnational level means that there also exists no direct or circular relationship between decision-makers and those they govern. Unlike the representatives of national political institutions – who may be held accountable at the ballot box if they fail to act in accordance with their electoral mandate - participants in transnational technocratic organisations are typically accountable to no one. Indeed, although some actors may purport to be acting on behalf of a certain social group, participants are, in reality, rarely elected and often justify their inclusion in decision-making processes on the grounds of technical expertise or economic interest alone (Archibugi, Koenig-Archibugi, & Marchetti, 2011; Dingwerth, 2007). Thus, as chains of delegation have become stretched, scholars

enter into a “social contract” with the state, conceding some of their freedom to the state in exchange for the protection of individual rights (Rousseau, 1997). Within this context, legitimacy can be conceptualised primarily in terms of a direct consensual arrangement between the rulers and the ruled, under which the state may legitimately exercise its authority only in accordance with the terms of that “social contract”, usually established through a system of representation or majority voting.

⁷ Bohman (2005) makes reference to the distinction between *demos* - a unified will of the people attached to nation-state and the judicial model of self-representation - and the *demosi* - a heterogeneous and distributed public sphere or community of humanity.

observe how accountability between decision-makers and their constituents has grown ever weaker, leading to concerns about how the public interest can be protected within transnational technocratic decision-making processes, unconstrained by the formalised electoral mechanisms of the nation-state. (Black, 2008; Steffek & Hahn, 2010; Tallberg & Uhlin, 2011)

This problem of accountability is particularly prominent in the context of standards bodies, whose highly technical nature means that credibility and influence are often conferred on the basis of expertise or accreditation as opposed to the consent of the governed. As a result, critics observe how decision-making authority tends to be deferred to technical experts, who are largely unelected and unaccountable and whose motivations and objectives may not necessarily be aligned with those of consumers (Estlund, 2003)⁸.

Given the limitations of traditional theories of democratic legitimacy, the past few decades have witnessed the production of a large body of academic literature dedicated to describing and analysing the legitimacy of transnational institutions. Although this academic scholarship is highly diverse, broadly speaking, two main approaches can be identified; the empirical which examines the acceptance and the subjective perception of legitimacy among those subject to rulemaking authority, and the normative which seeks to assess the acceptability of political authority against a range of procedural and substantive criteria. (Beetham, 2013; Zürn, 2004)

Firstly, the empirical approach – which has its roots in Weberian social science – focuses principally on how power and authority of an institution are subjectively experienced, assessing, for example, the extent to which governing institutions can engender acceptance on the part of their internal and external stakeholders (Weber, 1984). In the words of Suchman (1995, p. 574), empirical legitimacy can be thought of as the

⁸ Estlund (2003) describes this deferral of decision-making responsibility to unaccountable experts as a transition to what he terms Epistocracy or rule by experts.

'generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions'. Within this framing, the rules and authority of an institutional arrangement are legitimate if they enjoy the consent of those who are subject to them. Conversely, an institution may also be shown to be illegitimate if it can be demonstrated to lack the support or fail to ensure the compliance of its constituents. Within the empirical framework, therefore, it is possible to make the case that the European Union lacks legitimacy since polling data regularly shows that it lacks the support and trust of a majority of European Union citizens (Buchanan & Keohane, 2006; Hurd, 1999).

For theorists, there are several reasons why the authority of an institution may be accepted as legitimate by its stakeholders, including for example, the acknowledgment of the institution as necessary or inevitable, the acceptance of the institutions goals or procedures as morally appropriate, or in some instances pure self-interest, or what Suchman (1995) describes as cognitive, moral and pragmatic legitimacy. In the case of technocratic institutions such as standards bodies, the expertise of participants as well as the technical quality of the outputs produced, are often cited as significant factors in the social acceptance of authority.

The emphasis of empirical approaches on the acceptance of the authority of decision-making bodies within stakeholder communities, mean that research projects which adopt this perspective tend to focus their analysis on determining the extent to which relevant actors perceive an institution's processes and outputs to be legitimate (Nullmeier & Pritzlaff, 2010; Peters, 2013; Reus-Smit, 2007). Since most large transnational technocratic institutions often lack fixed or identifiable stakeholder groups whose perception can be measured, empirical approaches to legitimacy, on the whole, tend to be less well suited to assessing the legitimacy of transnational organisations such as

standards bodies⁹.

In contrast to the empirical approach, the normative approach to legitimacy focuses on the conditions under which an institution may be judged to be legitimate; that is, what are the characteristics of a governing institution that makes its rulings acceptable. Whereas empirical legitimacy focuses primarily on the perceptions of the ruled, normative legitimacy emphasises the qualities of the ruler; seeking to determine the precise conditions under which authority becomes morally justifiable. In this way, the normative legitimacy of a given institution can be evaluated not by the social acceptance of those subject to its authority, but rather by the extent to which its procedures and process are congruous with specific norms and criteria derived from principles of liberal democracy (Fraser, 2007; Zürn, 2004). Such criteria often relate to procedural aspects of governance such as transparency and accountability, inclusion and participation, and deliberative quality, but might also include analysis of an institution's performance including, for example, its problem-solving capacity or efficacy.

Although empirical and normative forms of legitimacy are usually discussed separately, scholars note how at the transnational level “an institution or system or polity will in most cases have to enjoy” normative legitimacy “in order to enjoy [empirical] legitimacy” (Weiler, 1991: 416). That is, in the absence of any formal legal mandates or statutes from which institutions can derive an unquestionable right to rule, the empirical legitimacy of transnational governance arrangements is often reliant upon the perceived legitimacy of the institution's procedures and the outcomes they produce – or put simply their ‘normative legitimacy’. This is particularly true in the case of informal and voluntary consensus organisations such as standards consortia, where the willingness of stakeholders to comply with the technical specifications produced, is very often reliant on

⁹ Further to this, some studies have also attempted to reconstruct the discursive basis of these beliefs, that is, the social norms and values upon which their beliefs are rooted and the discursive practices through which they are brought about (Reus-Smit, 2007).

the perceived openness, fairness and quality of the development process and well as the technical merit of the specifications themselves (Hatanaka & Konefal, 2013).

Given the primacy of normative conceptualisations of legitimacy at the transnational level, together with the methodological difficulties of studying the empirical legitimacy of standards bodies, for the purpose of this thesis, a normative approach to legitimacy will be used. In order to do so, however, it is first necessary to make a further important distinction between the two complementary aspects of normative legitimacy: substantive legitimacy which emphasises the importance of institutional outputs and performance; and procedural legitimacy which focuses on the democratic quality of institutional processes.

In what follows I demonstrate how in the context of consortia-based standardisation, these two aspects of normative legitimacy can be understood in terms of the two mutually reinforcing elements of Clarke's mantra of standardisation 'running code' (substantive legitimacy) and rough consensus (procedural legitimacy) (Abbate, 2010; Russell, 2014). Although historically, analysis of the legitimacy of standard bodies has tended to prioritise the former, I observe how the rapid expansion and commercialisation of the web along with the proliferation of techno-policy standard development has increasingly led scholars to scrutinise the openness and democratic quality of the so-called 'rough consensus' approach to standards development. As such, in order to be legitimate, I argue that informal standards bodies must be able to demonstrate both substantive and procedural legitimacy.

'Running Code' (Substantive Legitimacy)

Within the literature on normative theories of legitimacy, the term substantive legitimacy (also referred to as output legitimacy) is used primarily to refer to the problem-solving capacity and efficacy of collective decision-making processes. Within this framing, political institutions may be determined to be legitimate only to the extent to which they achieve their intended purpose, whether that is the protection of human rights, economic

growth, a reduction of carbon emissions or some other policy objective. As Scharpf put it, “political choices [of an authority] are legitimate if and because they effectively promote the common welfare of the constituency in question’ (Scharpf, 1999, p. 6). In this way, the notion of substantive legitimacy can be said to be characterised as following a consequentialist logic of performance and is closely related to the criterion of ‘effectiveness’ and ‘efficiency’ (Majone, 1999; Risse, 2006). As a result, research which examines substantive legitimacy tends to focus on the outputs of decision-making processes and how these act to promote or inhibit the common good, addressing questions such as: did the process produce an outcome? What effects did the outcome have on relevant stakeholders and constituents – positive or negative? Were there any unforeseen consequences?

For many, the demonstration of substantive legitimacy by decision-making bodies is particularly crucial at the transnational level, where the ability of technocratic organisations to coordinate stakeholders and produce effective responses to global threats such as migration or climate change, is often seen to outweigh demands for procedural rigour (Backstrand, 2013). In the context of environmental governance, for example, the legitimacy of the United Nations Framework Convention on Climate Change is arguably far more contingent on its ability to deliver substantive reductions in carbon emissions than the openness or transparency of the processes through which its associated agreements are reached (Bäckstrand, 2013; Bernstein, 2011). Similarly, while the relative openness and inclusivity of an organisation such as the Internet Governance Forum (IGF) should be commended and encouraged, it is ultimately its effectiveness in tackling collective problems that will determine its legitimacy in the eyes of its stakeholders.

In the context of web standardisation, substantive legitimacy has historically been judged by the extent to which the standards produced by a given organisation are widely adopted or implemented (Boström & Hallström, 2013; Updegrove, 1995a). The reasons which underlie the acceptance of standards can be varied but are commonly understood to

include both the efficiency of the development process through which the standards are created as well as the technical quality and efficacy of the standards themselves (Boström & Hallström, 2013)¹⁰.

In the case of the former, commentators observe how the notoriously complex and often protracted development processes of some standards bodies, can cause potential implementers to become frustrated with the process of standardisation, leading, in some instances, to the proliferation of proprietary or non-standardised implementations (Jakobs, 1998; Updegrave, 2008). By ensuring that standards development processes are sufficiently streamlined and responsive to market needs, therefore, standards bodies can increase the likelihood that their standards will be widely adopted and so in the process enhance their substantive legitimacy.

The importance of procedural efficiency to the substantive legitimacy of standards bodies, was perhaps best illustrated by the so-called “religious war” of internet standards between the Open System Interconnection standard (OSI) developed by ISO and the Internet Protocol Suite (TCP/IP) developed by the IETF, which offered alternative approaches to defining interface operations between disparate networks. Despite enjoying an early advantage in terms of market share and international support, the rigid and formalised procedures of ISO gradually caused the development of the OSI framework to stagnate, as stakeholders repeatedly tried and failed to secure unanimous agreement on a standardised framework for protocols. By adopting a more flexible and grassroots approach to standardisation which emphasised testing and implementation over formalised procedures, the IETF was able to outperform ISO in terms of the speed of its

¹⁰ Given the focus of substantive legitimacy on decision-making outputs, research which has previously examined the substantive legitimacy of standards development organisations, has typically focused on assessing the extent to which standards are widely implemented as well as the extent to which they achieve their technical objectives (Boström & Hallström, 2013). This presents a number of challenges for researchers interested in examining contemporary standards since the implications of a standard, may not be fully apparent for several years after implementation (Fuchs, Kalfagianni, & Havinga, 2011; Hahn & Weidtmann, 2016).

development process. As a result, by the early 1990's the TCP/IP had overtaken OSI, establishing itself as the *de facto* standard for computer network interconnection - a development which would later prove decisive in paving the way for the emergence of the internet as we know it today.

In addition to procedural efficiency, the substantive legitimacy of standards bodies is often also largely dependent on the technical quality of the standards that they produce. In the context of web standardisation, the technical quality of standards has historically been evaluated primarily in relation to their conformance with the so-called 'running code' principle of standards development. Made famous by Clark's mantra, the term is sometimes used to signal the general expectation that through rigorous testing and implementation standards will be able to demonstrate technical efficacy. More commonly, however, the term is used to denote the more specific expectation that standards bodies be able to demonstrate multiple independent interoperable implementations of a standard before allowing it to advance along the standards track (Crocker, 1987; 1993; Updegrove, 1995b).

From a practical perspective, the expectation that multiple versions of a standard are tested and implemented as part of the design process, allows working groups to pre-empt and resolve potential bugs quickly and efficiently, therefore increasing the chances that the standard will be widely adopted once published. From a more normative perspective, the imperative to produce independent implementations helps standards bodies to promote competition by providing choice for potential vendors, and thus avoid the kinds of monopolisation or network dependencies which could stifle network growth (Jakobs, 2003). In this way, the perceived quality of a given standard can be understood as being dependent not only on its technical efficacy but also on effects on the wider network or marketplace.

Given the importance of web standards to the global economy, the pursuit of economic

objectives such as these have over the years become increasingly deeply ingrained in the political culture and policies of the standards community. The so-called OpenStand principles of open standards development – to which most of the major standards bodies including the W3C and IETF have committed themselves - for example, include several references to the need for standards to ‘enable global competition’, ‘serve as building blocks for further innovation’, and ‘contribute to the creation of global communities, benefiting humanity’(OpenStand, 2017). The W3C’s patent policy, meanwhile, was developed explicitly with the intention of preserving openness and innovation online by prohibiting the inclusion of patents within W3C specifications, which might prevent their implementation on a royalty-free basis (Russell, 2003; W3C, 2004).

Today, economic objectives such as innovation and competition continue to be the primary metrics by which the technical quality of most contemporary standards are judged. However, the relatively recent transformation of the web from an academic curiosity to the most important technical artefact of the 21st century, has led web standards - and by extension standards consortia – to become increasingly embroiled in a much broader range of public policy disputes, from concerns about the security of e-commerce transactions and the privacy of personal data, to moral panics about copyright infringement and the proliferation of online pornography (DeNardis, 2009; Morris, 2011; Morris, J. & Davidson, 2003). As a result, the substantive quality of web standards can today no longer be thought of purely in terms of their effects on interoperability and compatibility of an obscure information network, but – as described in the previous chapter - also increasingly in relation to the pursuit of a wide range of public policy objectives.

Whilst most venues of standards development have traditionally eschewed political considerations, the growth of the web as a technology of social and political importance has led to a growing recognition within the standards community of the need to acknowledge the ways in which their work impacts on public policy and the broader user

community. As John Morris argued, 'the standards development process must be "open" to the identification and consideration of public policy concerns. Standards that are guided by technical merit to the exclusion of policy considerations cannot be considered to be open in their creation' (Morris, 2011, p. 13).

The emergence of standards organisations as desirable vehicles for multi-stakeholder activities to address public policy issues is evident not only in the rise in techno-policy standards development but also increasingly in the political culture and architecture of the standards bodies themselves. The W3C, for example, has several working groups dedicated to addressing a range of web policy issues including privacy and accessibility (W3C, 2015c). The Internet Research Task Force (IRTF)¹¹ meanwhile, has recently chartered the 'Human Rights Protocol Considerations Research Group' in order to examine whether standards and protocols can 'enable, strengthen or threaten human rights, as defined in the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR), specifically, but not limited to the right to freedom of expression and the right to freedom of assembly' (IRTF, 2018b).

Although the articulation of such socio-political metrics of substantive legitimacy is perhaps inevitable given the centrality of the web to almost all aspects of contemporary social, economic and political life, for many, their consideration nonetheless raises some significant concerns regarding the sufficiency of a purely substantive approach to measuring the legitimacy of standards bodies. Specifically, scholars such as Fuchs et al. (2011) note how unlike previous technical and economic metrics of substantive quality – which typically enjoy universal recognition and acceptance among relevant stakeholder groups – newer political and value-based metrics of substantive legitimacy are by their very nature contested, since different actors will be likely to prioritise and interpret

¹¹ The Internet Research Task Force (IRTF) works alongside its sister organisation the IETF. While the IETF focuses on the shorter-term issues of engineering, the IRTF focuses on longer-term research issues related to internet protocols, applications, architecture and technology (IRTF, 2018a)

competing values differently. For example, in the case of a standard which has implications for data protection, it might be expected that civil society groups such as the Centre for Democracy and Technology (CDT) or the Electronic Frontier Foundation (EFF) would interpret the value of 'user privacy' more highly, than platforms such as Google or Facebook, whose business models are dependent on the collection of large quantities of user data¹².

Thus, whilst early standards development organisations might once have accurately been described as what Peter M. Haas (1992, p. 3) termed *epistemic communities* – transnational 'network of professionals with recognised expertise and competence in a particular domain who are united by shared, normative and casual beliefs, practices, and notions of validity' - the introduction of social and political objectives into the calculus of standards development has meant that consensus on the values that should be pursued through standardisation is no longer so assured.

In the absence of an agreed set of values or metrics against which technical outputs can be judged, commentators observe how the assessment of the legitimacy of standards bodies purely in terms of the quality of their substantive outputs is becoming increasingly problematic (Fuchs et al., 2011, Morris 2011). Indeed, while such an analysis may be useful in determining the performance of an institutional process in relation to a set of predefined goals or objectives, it nonetheless tells us nothing about the nature of the objectives themselves, including; how they were determined, by whom, and the extent to which they are congruent with the values or interests of the wider community of users.

In such circumstances, it becomes necessary for researchers to not merely consider the legitimacy of standards consortia in terms of their technical outputs, but also the democratic quality, openness and inclusivity of the processes through which the values

¹² DoNotTrack and P3P are two recent examples of how standards development can intersect with policy issues related to data privacy (W3C, 2007, 2015c)

used to judge the quality of those outputs are agreed by participants. Put another way, in the context of their development of techno-policy standards consortia need not only to demonstrate their commitment to ‘running code’ (substantive legitimacy) but also to ‘rough consensus’ (procedural legitimacy). With this in mind, I now turn to the second aspect of the normative legitimacy, procedural legitimacy.

In what follows, I argue that the procedural legitimacy of web standards consortia can be most appropriately understood using ideas derived from deliberative democratic theory. In doing so, I highlight some of the parallels that previous scholars have drawn between these ideas and standards development practices. While I am sympathetic to the views of those commentators who have celebrated web standards consortia as exemplars of deliberative democratic governance (Fromkin 2003; Russell, 2003), I also note the concerns of others who have questioned the extent to which the technical and commercial processes of standards development can be expected to conform to the strict normative criteria of deliberative theory. In order to examine the validity of these concerns empirically, I argue that it is necessary to develop an analytical framework capable of assessing the procedural legitimacy of web standards consortia from a deliberative perspective.

Procedural Legitimacy (Rough Consensus)

Within the literature on normative legitimacy, the term ‘procedural legitimacy’ is used to refer to the democratic quality of decision-making processes. In contrast to substantive aspects of normative legitimacy which focus purely on the outputs of decision-making and the effects that those outputs have for relevant stakeholders; procedural legitimacy examines the appropriateness and fairness of the processes through which those outputs are produced. Put another way, if substantive legitimacy is concerned primarily with the “product” of collective decision-making, procedural legitimacy concerns itself with the “production” or, as Barnard (2001, p. 27) puts it, ‘procedural legitimacy

defines the quality that makes “getting there” politically right’.

From this perspective, an institution can be considered as legitimate only to the extent to which the processes through which collective decisions are made are consistent with certain normative standards derived from democratic theory, including, for example, inclusivity, transparency and consensus (Manin, 1987). Within the literature, it is common for theorists to categorise these criteria into one of two aspects of procedural legitimacy, namely ‘input’ and ‘throughput’ legitimacy (Scharpf, 1999; Schmidt, 2013; Zürn, 2004)¹³.

Input legitimacy is typically used to refer to those aspects of procedural legitimacy related to the scope of participation and inclusion of relevant stakeholders in the decision-making process. When considering the legitimacy of any form of collective decision-making, it is essential to ensure that the authentic demands of all relevant stakeholders can be transferred for consideration, from the public space of will formation to the empowered space of decision-making, either through the direct participation of the stakeholders themselves or through the indirect representation of those views by political trustees (Dryzek & Niemeyer, 2008). As such, in order for an institution to achieve normative input legitimacy it is argued that it should seek to establish appropriate mechanisms to ensure those who are affected by its decisions are given equal opportunities and resources to be able to access and influence the proceedings of the decision-making process (Dingwerth, 2007; Risse, 2006). Research focusing on this aspect of legitimacy leads us to ask questions such as; do decision-makers adequately represent the diverse views of their constituents? On what basis, have they been given the right to decide? Who is included or excluded from deliberations? Are marginalised views accounted for? In this way, input legitimacy is closely associated with normative democratic ideals of inclusivity,

¹³ Scharpf’s original distinction between input and output legitimacy can largely be thought of as equivalent to the distinction between procedural and substantive forms of normative legitimacy (Scharpf, 1999). Later scholars have since introduced the notion of ‘throughput’ legitimacy to refer to those aspects of input legitimacy which relate specifically to the conduct of the decision-making processes themselves including the quality of deliberations (Schmidt, 2013).

participation, representation, and consent.

The second aspect of procedural legitimacy, 'throughput legitimacy'¹⁴, relates to the justification of a model of governance based on the quality of the decision-making process itself (Bekkers & Edwards, 2007; Lieberherr, 2013). Whereas input legitimacy emphasises the *scope* of participation, throughput legitimacy is far more concerned with the *quality* of participation – seeking to ensure, for example, that deliberations are conducted respectfully, that the views and opinions of participants are adequately considered or that participants offer justifications or reasons for the views expressed. Put another way, if input legitimacy concerns the “who” of political decision-making, throughput legitimacy relates to the question of “how? Research which seeks to assess throughput legitimacy may thus deal with questions such as; to what extent are procedures characterised by authentic deliberation? Do participants treat each other with mutual respect? Do participants offer justifications for their opinions?

While all proceduralist approaches share a common recognition of the importance of the inputs and throughputs of formal decision-making processes as key sources of legitimacy, views of precisely what types of procedures are appropriate, and how these are expected to legitimise decision-making outcomes vary significantly across the literature. At the level of the nation-state, for example, the prevailing aggregative approach to procedural legitimacy – rooted in social choice theory – interprets the preferences of individuals as fixed, and so conceptualises procedural legitimacy primarily in terms of the quality and fairness of the formal democratic procedures, through which the pre-formed preferences of individual citizens are aggregated (Arrow, 1963; Black, D., 1958; Dahl, R. A., 1989; Schumpeter, 2013). While such an interpretation of procedural legitimacy could

¹⁴ Though traditionally subsumed within the input category of normative legitimacy – under the heading of democratic or procedural criteria – within the context of the legitimisation crisis of transnational governance, many theorists have begun to perceive the types of procedural indicators addressed by throughput legitimacy as increasingly important, leading to it being considered as a separate aspect of normative legitimacy in its own right (Zürn, 2004)

conceivably be applied to formal SDO's - whose participants are geographically defined - the need for aggregative models of procedural legitimacy to define relevant actors in relation to formal membership criteria means that such approaches do not translate well to more informal transnational institutions such as standards consortia, whose political communities typically lack fixed boundaries.

Given the limited applicability of aggregative models to the transnational level, since the 1980s scholars have increasingly looked to alternative theories in order to conceptualise the procedural legitimacy claims of transnational technocratic bodies such as standards organisations. Among the most influential and popular of those proposed has been deliberative democratic theory which seeks to reemphasise the centrality of deliberation as a critical source of institutional legitimacy (Benhabib, 1994; Cohen, 1989; Dryzek, 2000, 2001, 2012; Manin, 1987).

Procedural Legitimacy and Deliberative Democracy

Drawing variously on the political philosophies of Jurgen Habermas and John Rawls, 'deliberative democracy' rejects the notion of individual preferences as fixed or pre-given (Habermas, 1985, 1995; Rawls, 2009), instead highlighting the ways in which the values and beliefs of citizens are, in fact, highly malleable and therefore amenable to 'the force of the better argument' (Habermas, 1985: 24). In contrast to aggregative approaches to democracy, which view collective decision-making processes purely in terms of adversarial strategic bargaining and preference aggregation, deliberative theorists argue that political processes should instead be interpreted as mechanisms of will-formation and deliberation in which citizens are expected to be open to persuasion and to justify their own beliefs in terms acceptable to others (Bohman, 1997, 1998; Dryzek, 2000; Elster, 1998; Gutmann & Thompson, 1998). As Cohen (1989, p. 3) put it, 'The notion of a deliberative democracy is rooted in the intuitive idea of a democratic association in which the justification of the terms and conditions of association proceeds

through public argument and reasoning among equal citizens’.

By engaging in such reflexive and open processes of mutual reason-giving, theorists claim that participants will not only be able to have their views represented, but - to the extent that they are willing to put aside their strategic interests - also be more likely to identify common norms and values which can be used to evaluate the quality of substantive outcomes (Cohen, 1989; Gutmann & Thompson, 1998). Thus, while it is acknowledged that within any political community there will be a plurality of interests, theorists nonetheless claim that deliberative procedures can help to legitimise substantive outputs, since the objectives and goals which they seek to realise will, in theory at least, be consistent with the values of the majority of stakeholders (Habermas, 1995)¹⁵. As Jurgen Habermas (1995, p. 117-118) commented;

‘Under the pragmatic presuppositions of an inclusive and non-coercive rational discourse among free and equal participants, everyone is required to take the perspective of everyone else, and thus project herself into the understanding of self and world of all others; from this interlocking of perspectives there emerges an ideally extended we-perspective from which all can test in common whether they wish to make a controversial norm the basis of their shared practice’.

Whereas aggregative approaches to democracy conceptualise legitimacy purely in terms of the application of appropriate procedural mechanisms of preference aggregation, for

¹⁵ In addition to enabling the development of a common understanding of substantive legitimacy, some deliberative theorists also argue that greater levels of procedural legitimacy may also help to enhance substantive quality of decision-making outputs by enabling a more extensive articulation of reasons. That is, by harnessing the collective knowledge of highly diverse stakeholder groups, institutions will be more likely to identify effective solutions to collective problems, delivering more informed and rational results whilst also increasing the acceptability of decisions (Scherer & Palazzo, 2007). These benefits are for many, particularly evident in the context of standardisation, where the inclusion and engagement with potential implementers and stakeholders at an early stage of the design process, enables working groups to more easily pre-empt and address potential bugs as well as organically develop broad support for standards before they reach the implementation stage, thereby increasing the chances of their widespread adoption once they become market ready.

deliberative democrats, legitimacy can be said to derive from the potential of affected stakeholders to engage in inclusive and non-coercive processes of mutual reason giving orientated towards the realisation of rational consensus (Cohen, 1989; Gutmann & Thompson, 1998)¹⁶.

Within this framing, institutions can be seen to be procedurally legitimate only to the extent to which they are able to provide a framework within which such deliberative encounters can take place. For this reason, research which studies the procedural legitimacy of transnational organisations from a deliberative perspective typically seeks to assess the quality of deliberative and decision-making practices within those institutions observing, for example, the extent to which deliberations are inclusive and transparent, and whether participants provide justifications for their arguments and treat each other with respect (Bächtiger et al., 2009; Steenbergen et al., 2003; Steiner, 2004).

By defining legitimacy in relation to the quality of interactions between interested parties rather than more formal aggregative democratic procedures, deliberative models of legitimacy, effectively circumvent the need to extrapolate electoral mechanisms from the nation-state to the transnational level. In doing so, it is argued that deliberative models offer a far more flexible and practical approach to assessing the legitimacy of transnational technocratic institutions than aggregative approaches which have struggled

¹⁶ Importantly for deliberative democrats, 'deliberation' here is not meant to indicate that any kind of communication is sufficient to legitimise a decision-making process. Instead, in referring to the need for stakeholders to deliberate, deliberative democrats emphasise the importance of participants engaging in a very specific type of communicative practice (Habermas, 1985). Although the precise nature of the deliberative principles by which participants are expected to abide varies within the literature, most elaborations of the theory highlight the importance of the manner in which the deliberations themselves are conducted, including, for example, the need for participants to treat each other with respect and provide justifications for the views expressed (Gutmann & Thompson, 1998). In addition, some theorists also seek to emphasise the importance of criteria related to the institutional setting within which the deliberations will take place, including the need for all relevant materials to be accessible to participants, and for the process itself to be transparent both in terms of its conduct but also in terms of decision-making. Finally, while some theorists are content to require only the presence of justification, others go further, insisting that justification given by participants should be rational or made in terms of the 'common good' (Bächtiger et al., 2010; Bohman, 1997). These debates and their applicability to consortia-based standardisation will be explored in more depth in chapter three.

to adapt to the new multi-layered and multilateral reality of contemporary transnational governance and which, consequentially, remain for the most part conceptually limited to the state. As John Dryzek (2000, p. 129) observed;

'[A] communicative model of democracy is particularly conducive to international society because, unlike older models of democracy, it can downplay the problem of boundaries. These older models always saw the first task in their application as the specification of the boundaries of a political community. Deliberation and communication, in contrast, can cope with fluid boundaries, and the production of outcomes across boundaries. For we can now look for democracy in the character of political interaction, without worrying about whether or not it is confined to particular territorial entities'.

Standards Consortia and Deliberative Democracy

Over the past few decades, the gradual recognition of the utility of deliberative theory as a useful tool for describing the legitimation claims of transnational bodies has led to a growing number of studies by international relations scholars aimed at identifying real-life examples of deliberative governance. Among the most notable of the various organisations and institutions touted as potential exemplars of deliberative governance in practice, have been standards consortia, whose 'rough consensus and running code' approach to standardisation, some commentators have argued, shares certain affinities with the normative ideals of deliberative theory (Froomkin 2003, Russell 2003, Umpathy, 2010).

In his 2003 study of the IETF for example, Michael Froomkin (2003, p. 752), suggests that the 'high degrees of openness and transparency' demonstrated by the working groups as well as the 'surprising degree of self-consciousness' and reflexivity with which participants go about their work, means that the IETF can arguably be considered as one of the few contemporary 'concrete example[s] of a rulemaking process that meets Habermas's

notoriously demanding procedural conditions for a discourse capable of legitimating its outcomes'. More recently, Russell (2003) and Umpathy (2010), have both similarly observed how the W3C's openness to the consideration of public contributions and well as its leadership's willingness to let the standards development process run as a kind of "balancing act" between competing interests seems consistent with Habermas' views on the importance of open procedures.

Underpinning all these claims is the fundamental assertion that the informal and meritocratic ethos of standards development which has characterised most consortia-based standards bodies since the late 1980s is capable not only of facilitating agreement on technical outputs, but perhaps more importantly, of doing so in a way that promotes the kinds of open, rational and civil discourse needed to legitimise those outputs in the absence of formal democratic procedures.

In the case of the IETF for example, Janet Abbate (2000) notes how decision-making processes are often managed using 'Requests for Comments' (RFCs) – an unofficial system of notices and memoranda – utilised as a means of circulating important information and collecting feedback from participants. RFCs can be written by anyone and are usually developed through a type of informal peer-review process, with working group participants taking turns to contribute their own opinions and suggest edits (Crocker, 1987). In this way, Abbate (2000, p. 74) observes how RFCs are 'specifically designed to promote informal communication and the sharing of ideas in the absence of technical certainty or recognised authority', providing a focal point for the group's discussions as well as a mechanism through which competing implementations can be pitted against each other, and the winner determined 'through raw Darwinian selection' (Moody, 1997).

Aside from the various practical benefits discussed above, the view that, as Steven Levy (1984, p. 31) put it, 'hackers should be judged by their hacking' seems to offer a uniquely

non-hierarchical and objective means by which power can be allocated among consortia participants (Malcolm, 2008). In contrast to formal SDO's – where decision-making often simply reflects the existing balance of power among incumbent industrial interest groups – the emphasis placed on consensus-led deliberation and rigorous testing by consortia has helped to foster the emergence of a meritocratic ethos of standards development which, for some, is far more consistent with Habermas' injunction that decision-making processes be guided by the 'force of the better argument' (Froomkin, 2003, Umpathy, 2010).

Indeed, while all approaches to standardisation have historically involved a degree of deliberation, scholars such as Froomkin (2003) note how the rise of consortia-based standardisation has brought these aspects of standards development to the fore, fostering the creation of informal and consensus-driven processes, within which proposals can be subject to intense scrutiny by the broader community and in which participants can work cooperatively to identify and shape common values and principles. As a result, scholars observe how the deliberative processes of consortia-based standardisation can help to address the limitations of substantive claims to legitimacy by facilitating agreement on a shared set of values and objectives against which technical outputs can be assessed. From this perspective, Clarke's mantra of 'rough consensus' can be understood not merely as a succinct description of standards development practice, but perhaps more importantly as a concrete claim to procedural legitimacy.

While it is difficult to disagree with the basic assertion that informal standards processes are highly deliberative, other scholars have nevertheless been far more cautious in their assessment of the legitimacy of the 'rough consensus and running code' approach to standardisation and its apparent affinity with deliberative theory (King, Grinter, & Pickering, 1997; Morris, 2011) . Critiques of consortia-based standardisation are broad-ranging but typically relate to concerns regarding standards bodies' inclusivity, their willingness to acknowledge or engage with the policy implications of their work, and their capacity to host the kinds of extensive discussions necessary to legitimise techno-policy

standards (Garfinkel, 1998; Halpin, 2013; King, Grinter, & Pickering, 1997; Schoechle, 2009)¹⁷.

Firstly, although many consortia boast large and sometimes diverse international memberships, Hawkins (1999) observes how very few are based outside of the US, with large multinationals based in Europe or Asia far more likely to participate in US-dominated organisations, rather than attempt to establish competing national or regional consortia of their own. As a result, some critics have questioned whether the current standards ecosystem risks becoming unfairly orientated towards US market conditions, in a way that marginalises the interests of stakeholders from the developing countries, whose burgeoning ICT sectors are unable to compete with their more established western competitors (Prakesh, 2016).

In a related concern, commentators such as Schoechle (2009) note how the almost exponential growth of the web over the past two decades has brought into question the diversity and inclusivity of standard bodies as a whole. As the web has grown beyond the narrow confines of a handful of elite US universities and into the living rooms, offices and pockets of billions of individuals worldwide, the number and diversity of actors affected by the design of web standards have also grown. Thus whereas the previously tight-knit community of researchers who participated in standardisation in the late 1980s could justifiably have claimed to be representative of what, at the time, was still a relatively small and homogenous community of ICT professionals, scholars observe how the commercialisation of the web, has made it difficult to maintain the assertion that a handful of mainly western and overwhelming male engineers can legitimately take decisions on behalf of an increasingly heterogeneous and disparate community of users (King et al.,

¹⁷ Scholars have also highlighted how in the context of the web's commercialisation, the meaning of 'rough consensus' itself, both as a descriptor of standards development practice and a claim to procedural legitimacy, has become increasingly diluted as the term has been applied to an ever-broader range of institutions, many of which lack the procedural features, openness or transparency of bodies such as the IETF (Garfinkel, 1998; Halpin, 2013; King, Grinter, & Pickering, 1997; Schoechle, 2009)

1997).

In recent years, concerns about the lack of diversity within standards bodies have most commonly been framed in terms of the domination of standards processes by corporate actors, which critics claim is a direct consequence of the restrictive membership policies that some standards consortia chose to impose. Indeed, although some informal standards bodies such as the IETF actively promote grassroots participation, scholars observe how most newly established standards consortia are membership bodies whose participants are required to pay fees in order to contribute to discussions - a practice sometimes referred to as “pay to play” (Schoechele, 2009). Despite being theoretically open to all interested parties, therefore, in practice, most consortia are today dominated by the relatively small number of private sector organisations who can afford the hefty membership fees as well as the resources required to actively participate in discussions.

In addition to impacting their inclusivity, some commentators observe how the domination of standards processes by corporate actors, has also impacted the willingness of consortia to consider broader issues of policy as part of their development processes (Malcolm, 2013). In contrast to the academics, computer scientists and engineers who traditionally comprised technical working groups, scholars observe how this new corporate brand of standards participant show little interest in the shared values and practices of the technical community, but are instead concerned first and foremost with representing the commercial interests of their employers - either as incumbents seeking to protect their privileged position or as insurgents hoping to gain a quick market share (Carpenter, 1996). As King et al. (1997, p. 23) put it, ‘these new players have little understanding of or use for the culture of [standardisation] or the elaborate social conventions and norms that sustained that culture and enabled the production of the very artefacts that so entice them’. As a result, critics observe how, since the web’s commercialisation in the 1990s standards processes have begun to take on a very different character with discussions increasingly driven by neoliberal economic imperatives and the pursuit of the short-term

interest of corporate actors, often to the exclusion of wider architectural principles or public policy concerns. As Jeremy Malcolm (2013) explains;

‘The underlying problem is that the internet community bodies have been captured by industry, and by a narrow segment of civil society that is beholden to industry... As a result, internet technical standards are biased in favour of a US-led, free market-directed model of competition, which fails to incorporate broader public interest objectives’

Finally, in addition to concerns about standard participant’s *willingness* to consider the policy implications of their work, some scholars have also questioned the *capacity* of the technical community to adequately contemplate the complex legal, social and economic issues raised by techno-policy standards development (Morris, 2011). In the view of commentators such as Jeremy Malcolm (2013), technical know-how can be no substitute for policy expertise and should not be treated as such, regardless of how open or deliberative the development process may be. As Malcolm (2013) himself states,

‘The W3C’s process is simply unsuitable for making any progress on a technical standard that involves disputed public policy issues, particularly those that impact broader community interests. These public policy issues have to be resolved first... preferably through a more structured multi-stakeholder process, before it becomes possible to develop a technical standard on the basis of those decisions’.

Together these concerns raise a number of fundamental questions about the meaning of a ‘rough consensus’ approach to standardisation, and the extent to which current standards practices are sufficient to legitimise the development of techno-policy standards. While many commentators continue to celebrate the procedural efficiency of standards consortia, others warn that their embrace of less formal and rigorous procedures risks undermining the procedural legitimacy of standards development as a whole. As Andrew

Russell (2014, p. 276) observed;

‘Standards consortia had stormed onto the scene by rejecting and subverting accepted procedures for balance, openness, and due process. Because these mechanisms had been developed over time to assure critics of the fairness and public accountability of the voluntary consensus standards process, their rejection amounted to a crisis of legitimacy for technical standardisation’.

An obvious solution to these concerns would, of course, be for standards bodies to reform their processes to make them more open and inclusive. Davidson et al. (2002) for example, argue that given their growing public policy role standards bodies should do more to encourage the participation of lawyers and other public policy experts at an early stage. Lawrence Lessig meanwhile, has similarly suggested that - in the context of their development of techno-policy standards – consortia should be treated the same as any other political institution. As Lessig himself commented, consortia ‘should be more open. If they want to do policy, they have to accept the constraints on a policy-making body, such as openness in who can participate’ (Lessig cited in Garfinkel, 1998, p. 42).

However, as the fate of the ISO’s TCP/IP standard (see above) demonstrates, the simple enforcement of a more procedurally rigorous approval process is by no means a guarantee of effective or legitimate governance. Whilst it might generally be anticipated that higher levels of deliberativeness and inclusivity will correlate to greater levels of overall legitimacy, some commentators observe how an overemphasis on the types of rigorous procedures prescribed by deliberative theory, may also – as a result of lengthier decision-making processes – inadvertently act to undermine the efficiency and effectiveness of an institution, and thus jeopardise its claims to substantive legitimacy (Bäckstrand, 2013; Bernstein, 2011; Dahl, R. A., 1989; Peters, 2013; Scharpf, 1999; Wieland, 2007)¹⁸.

¹⁸ Dahl (1999) described this tension between input-output legitimacy as the ‘democratic dilemma’.

The challenge that currently faces standards bodies, therefore, is how, on the one hand, to maintain the kinds of hierarchical, top-down leadership necessary for effective and efficient decision-making, while at the same time, satisfy growing demands for broader participation and the due consideration of non-technical policy issues. Put simply, that is, how to balance the competing demands of substantive and procedural legitimacy? Where precisely this balance lies and how organisations might be expected to achieve it, however, is not always so simple to determine and will vary considerably between institutions depending not only on the nature of the decisions taken but also the specific political culture and norms of the institution itself.

On the one hand, the level of procedural legitimacy that an organisation is expected to demonstrate will depend largely on the nature of the activities that it undertakes. In the case of standards consortia for example, it could justifiably be argued that historically the work of these organisations only required quite low levels of legitimation, since much of their work was purely technical in nature and so unlikely to significantly affect stakeholder groups beyond those of a small number of implementers and vendors directly involved in the design process. As the work of standards bodies has begun to impinge on areas of public policy, however, the levels of legitimation that they are expected to demonstrate has naturally increased in line with the potential impact of their work on a broader range of users.

On the other hand, the precise forms of legitimacy that transnational institutions are expected to enact will also vary across organisations, depending on the relative weight which stakeholders ascribe to different forms of legitimacy. In some contexts, for example, stakeholders may give greater importance to the transparency of a process, whereas in other circumstances participants may perceive justification of arguments to be more highly valued. Likewise, whereas some organisations may view a highly inclusive process as desirable, in another context, stakeholders may wish to place greater emphasis on the capacity of a small group of participants to engage in in-depth discussions (Bernstein,

2011; Take, 2012a).

Thus, despite a tendency within the academic literature to seek universal or objective measures of legitimacy, in order to assess the procedural legitimacy of an institution properly, it is necessary not only to evaluate its processes and outputs against normative procedural metrics, but also consider how each of those metrics should be interpreted and appropriately weighted within its specific institutional context. The question that presents itself therefore, is not whether the ‘rough consensus and running code’ approach to standards development is legitimate as such (given the terms broad application, such a question would arguably be unanswerable in any case) but more specifically; to what extent a specific institutional operationalisation of the ethos (the W3C in the case of this thesis) is procedurally rigorous enough to legitimise that organisations development of *techno-policy standards*?

In order address such a question, it is first necessary to determine which of the various normative standards of procedural legitimacy identified by deliberative democratic theory to consider and how each of these should these be interpreted and operationalised in the context of the consortia-based standardisation? If, as deliberative theorists demand, standards processes are required to be ‘inclusive’ for example, then who should standard bodies include and how? Similarly, if there is an expectation for standards development processes to be deliberative then how might we define ‘deliberation’ in the context of consortia and what metrics or indicators can we use to determine that such deliberation has taken place?

Despite the growing popularity of deliberative theory as well as a broadening awareness of the role of standards in the arbitration of public policy disputes – these are questions which, to date, have still received remarkably little scholarly attention. To address this gap in the literature, in the next chapter, I will present a detailed review of the current literature on deliberative democratic theory. In doing so, I will identify several indicators of

procedural legitimacy and discuss how each of these can be interpreted within the specific context of consortia-based standardisation. Together these indicators will then form the basis of an analytical framework which will later be used to assess the legitimacy of the W3C in the case of its development of the EME standard.

3. Analytical Framework

In the previous chapter, I argued that deliberative democratic theory offers a range of useful conceptual tools with which to investigate and assess the procedural legitimacy of informal web standards consortia. While some suggest that informal standards development processes demonstrate an affinity with deliberative theory, I observed how other commentators remain sceptical regarding the capacity of standards bodies to fulfil the normative requirements set out by deliberative scholars. Finally, I noted how despite the growing importance of these debates to the field of internet governance, to date surprisingly little empirical research has been conducted to investigate the legitimacy of standards organisations (Fromkin, 2003; Russell, 2003; Umapathy, Puro, & Bagby, 2012).

To address this gap in the literature, in this chapter I outline an original analytical framework for assessing the procedural legitimacy of web standards consortia inspired by deliberative democratic theory. Drawing on the work of deliberative theorists as well as their critics, I discuss several indicators of procedural legitimacy (inclusion, transparency, deliberativeness, respect, justification, and constructiveness), highlighting some of the controversies within the existing literature and suggesting how each of these indicators may be interpreted and operationalised in the context of web standards development. In chapter four, I will then proceed to discuss how this framework was applied empirically to assess the procedural legitimacy of the W3C in the context of its development of EME.

The ‘empirical turn’ in deliberative theory

Since the deliberative turn in democratic theory during the 1980s, normative approaches to transnational democracy have for the most part been dominated by scholarship which emphasises the importance of open and non-coercive deliberations among free and equal stakeholders as the principal source of institutional legitimacy. Whilst this ever-expanding body of literature is united by a shared understanding of the

legitimising power of communicative engagement, precisely what forms of deliberative interaction are required in order to legitimise a decision-making process and how such deliberation should be studied and assessed are questions about which deliberative scholars remain divided (Bächtiger et al., 2010).

For early theorists of deliberative democracy, their insistence upon 'deliberation' as a source of legitimacy was not intended to indicate that any communication between stakeholders would be sufficient to legitimise the outputs of a decision-making process. Instead, in referring to the need for deliberation, first generation deliberative democrats emphasised the importance of engaging in a very specific type of communication, rooted in the logic of Habermasian communicative action (Habermas, 1985). From this perspective, deliberation implied the engagement of participants in a highly systematic form of rational discourse, consistent with a range of normative procedural standards or what Habermas (1985) collectively termed the 'ideal speech situation'. Under such conditions, theorists anticipated that actors would tell the truth, justify their positions extensively, and be willing to yield to the force of the better argument. In doing so, theorists argued that participants would be able to evaluate the arguments of their opponents purely on the basis of the reasons and evidence provided, and come to a rational consensus unaffected by the coercive influences of strategic bargaining (Cohen, 1989; Gutmann & Thompson, 1998; Habermas, 1985).

Although some maintain that the normative prescriptions set out by early versions of deliberative theory offer a useful regulative ideal against which the procedures of transnational institutions might be assessed, in recent years, Habermasian interpretations of deliberative legitimacy have nevertheless attracted sharp criticism from a variety of scholars, many of whom object to what they perceive to be the unrealistic, abstract and hypothetical nature of the theory's normative claims, as well as the potentially exclusionary effects of its commitment to the ideals of consensus and discursive rationality (Dahlberg, 2007b; Kadlec & Friedman, 2007; Mouffe, 1999; Young, 2001).

In response to these critiques, deliberative theory has over the past two decades undergone several stages of revision and refinement, as a second, and more recently a third generation of deliberative scholars have sought to develop deliberative democracy from a “regulative ideal” into a “working theory” (Bächtiger et al., 2010). Taking on board the theoretical and methodological insights from a broad range of empirical studies and deliberative experiments, these scholars have gradually begun to move away from the earlier idealistic elaborations of the theory and towards a more realistic and empirically testable interpretation of the deliberative democracy which is more reflective of the challenges and limitations of deliberations within a pluralistic society (Dryzek, 2012; Niemeyer & Dryzek, 2007)¹.

Most notably, these efforts have led to the development of a wide range of analytical frameworks designed to empirically evaluate the performance of deliberative processes in relation to various normative standards of deliberative theory; including for example, the extent to which institutional design facilitates interactivity or constructive discourse as well as the micro-interactions of the participants themselves (Kies, 2010; Steenbergen et al., 2003; Steiner, 2004).

Undoubtedly the most popular and influential of all attempts to study deliberative theory has been the Discourse Quality Index (DQI) – a quantitative approach to measuring the quality of discourse in deliberations, which uses a sophisticated coding scheme in order to evaluate speech acts against a range of procedural criteria normatively grounded in Habermasian discourse ethics; including, levels and content of justification, respect and constructive politics (Steenbergen et al., 2003). Although initially developed to assess the deliberative quality of parliamentary debates, the index has since been refined and repurposed by scholars to study a wide range of deliberative encounters from deliberative polls and citizen forums to non-synchronous online fora, such as web forums and the comments sections of online newspapers (Collins & Nerlich, 2015; Graham, T. &

¹ Dryzek describes this move as deliberative theory’s ‘empirical turn’(Dryzek, 2012, p. 8).

Witschge, 2003; Monnoyer-Smith & Wojcik, 2011; Steffek & Hahn, 2010; Steiner, 2004; Stie, 2008; Stromer-Galley, 2007)².

While all of these studies share an understanding of the importance of deliberation as a source of legitimacy, variations in the theoretical interpretations of deliberative theory, together with the inevitable procedural differences which exist between institutional contexts means that there is no universal approach to the assessment of deliberative procedural legitimacy which can straightforwardly be applied to any case study. As such, in attempting to evaluate the legitimacy of standards development processes from a deliberative perspective, it is necessary to begin by carefully considering how to interpret the procedural standards identified by deliberative democrats within the specific historical and institutional context of web standardisation.

With that in mind, I will now present an original analytical framework, developed specifically to assess the procedural legitimacy of standards consortia in the context of techno-policy standards development.

Analytical Framework

When approaching the development of an analytical framework for the assessment of web standards consortia, the first question that needs to address is which of the numerous potential indicators of procedural legitimacy to measure. Within the literature, there currently exists a wide range of frameworks for assessing procedural legitimacy from a deliberative perspective, all of which define, interpret and combine the various possible evaluative metrics of deliberative theory in slightly different ways. Steenbergen et al. (2003) for example, list a total of nine criteria of deliberative quality; including, participation, level of justification, content of justification, respect, and

² Within the literature, there remains a great deal of debate over precisely where deliberation happens. Some scholars focus on traditional venues of political contestation such as parliaments (Steiner, 2004) or administrative committees (Joerges & Neyer, 1997), while others look to alternative and informal spheres of deliberation outside of institutional arrangements (Warren & Pearse, 2008; Wilhelm, 1999).

constructive politics. Whereas Schneider (1997, p. 72) uses just four dimensions (equality, diversity, reciprocity and quality) which, for him, ‘embody the spirit of the idealised public sphere’.

The task of selecting indicators for inclusion in the analytical framework is further complicated by the wide range of terms used by theorist to denote similar concepts. The expectation that participants actively engage with and respond to the views of others, for example, is commonly referred to as ‘deliberativeness’ but has also been described using the terms ‘reciprocity’ (Graham, 2002), and ‘interactivity’ (Friess & Eilders, 2015).

Despite these challenges, an extensive review of the existing literature reveals the following criteria to be those which deliberative theorists use most consistently to assess procedural legitimacy of deliberative processes.

Table 3.1: Indicators of deliberative procedural legitimacy

Indicator	Meaning
Inclusion	All actors affected by the issues under discussion should be able to participate either directly or indirectly. Also referred to as ‘discursive equality’ (Kies, 2010), and ‘participation’ (Steenbergen et al., 2003).
Transparency	All information relevant to the deliberations should be made available to participants, including records of discussions.
Deliberativeness	Participants should listen to the opinions of other participants and respond accordingly. Also referred to as ‘reciprocity’ (Graham, 2002), and ‘interactivity’ (Friess & Eilders, 2015).
Justification	Participants should support their opinions with reasons or justifications.
Respectfulness	Participants should conduct themselves in a professional manner.
Constructiveness	Participants should endeavour to identify common values and beliefs.

In addition to the indicators listed in the table above, some scholars have also assessed the quality of deliberations in relation to indicators such as sincerity (Graham, 2002), reflexivity (Jensen, 2003a) and empathy (Dahlberg, 2004). While the importance of these concepts to effective and legitimate deliberations is clear, assessing their presence within discussions empirically, presents a number of methodological challenges since they are largely internalised processes. This is particularly the case in studies which adopt a textual or content analysis approach (such as this one) since as Dahlberg (2004, p. 33) explains, 'written communications may only show traces of such a subjective process'.

As such, for the purposes of this study, the analysis of procedural legitimacy will be limited to the measurement of the inclusion, transparency, deliberativeness, justification, respect, and constructiveness all of which have been successfully operationalised to assess the quality of non-synchronous deliberations (Kies, 2010)³. Also, since 'inclusion' can relate both to the inclusion of individuals and discourses, this indicator will be measured across three dimensions, namely representation, participation and 'discursive inclusion' (see p. 81-88).

Having decided upon the indicators to include in the framework, a secondary question which needs to be addressed is how these indicators should be combined or arranged. In most previous studies of deliberative governance, scholars have typically chosen to maintain the analytical distinction between input legitimacy and throughput legitimacy. By making this distinction researchers are able not only to better disaggregate and organise the various criteria of deliberative democratic legitimacy but, to the extent that each of these categories refers to different aspects of the deliberative process, also develop insights into the relative strengths and weaknesses of the process at various stages. For example, in instances where the analysis reveals low levels of input legitimacy, this could

³ The choice of terminology for the indicators selected is partly influenced by common usage within the literature, but is also intended to reflect this study's own particular interpretation of deliberative theory. The reasons underlying the decision to include each of these indicators are discussed in the corresponding sections below.

be an indicator of what Young (2002) termed ‘external exclusion’, wherein individuals or groups are denied access to the decision-making process, either as a result of deliberate restrictions on participation or through a lack of sufficient means for counter-discourses to be considered as part of the deliberation. Alternatively, in a situation where the analysis reveals high levels of input legitimacy, but low levels of throughput legitimacy, this could suggest, that the problem is not the ‘external exclusion’ of minority viewpoints, but rather more subtle forms of ‘internal exclusion’ that Young (2002, p. 53) argues sometimes occur once counter-discourses have been transmitted to the process itself. These could include, for example, instances whereby ‘the terms of discourse make assumptions some do not share, [or] the interaction privileges specific styles of expression’.

Figure 3.1: Analytical Framework

Procedural Legitimacy	
Input Legitimacy	Throughput Legitimacy
Inclusion <i>(Representation, Participation, Discursive inclusion)</i>	Deliberativeness
Transparency	Justification
	Respectfulness
	Constructiveness

Given the potential analytical benefits of distinguishing between the input and throughput aspects of deliberative processes, for the purposes of the study, each of the indicators listed above was categorised accordingly (see Figure 3.1) (Scharpf, 1999; Schmidt, 2013; Zürn, 2004)⁴.

⁴ Scharpf’s original distinction between input and output legitimacy can largely be thought of as equivalent to that made in the previous chapter between procedural and substantive forms of normative legitimacy (Scharpf, 1999). Later scholars have since introduced the notion of

After selecting and arranging the indicators appropriately, the final stage is to determine how to interpret each of these indicators in the specific context of web standardisation. As described in the previous chapter, to do so, it is crucial not only to consider insights derived from the theory but also the specific political culture and norms of the organisation itself. Specifically, it is important to consider the expectations of stakeholders in relation to the balance between substantive and procedural aspects of legitimacy as well as any limitations that might prevent the organisation from adopting certain kinds of procedure.

In what follows, I examine each of the indicators selected, highlighting some of the controversies and debates within the literature as well as describing how each indicator will be interpreted for the purposes of this study⁵.

Inclusion

Until quite recently, direct participation in web standards development has tended to be limited to organisations such as telecommunications companies and browser vendors who are directly involved in their implementation (Jakobs, 2003; Kahin & Abbate, 1995; Russell, 2014). However, as the size and scope of the web have expanded, so too has the diversity of actors potentially affected by the design of web standards, leading to growing pressure on standards bodies to better represent the interests of a broader range of stakeholders including, civil society groups and users from developing nations. The pressure on standards bodies to be more inclusive has recently been amplified by their involvement in the development of techno-policy standards. However, given their lack of formal mechanisms of representations, precisely how standards bodies should be expected to facilitate the fair and balanced representation of a diverse range of

'throughput' legitimacy to refer to those aspects of input legitimacy which specifically related to the conduct of the decision-making processes themselves, including the quality of deliberations (Schmidt, 2013).

⁵ The purpose of this chapter is strictly to outline the indicators that will be used to assess the procedural legitimacy of the W3C and how these can be interpreted in the context of web standardisation. For a discussion of how each of these indicators was studied empirically, see chapter four.

stakeholder groups remains unclear (Abbate, 2000; Cerf, 1993; Egyedi, 2003; Garfinkel, 1998).

For deliberative democrats, how to equitably represent the interests and opinions of relevant actors within political decision-making processes is a central question of democratic legitimacy (Bohman, 1998; Cohen, 1989; Dryzek, 2001; Thompson & Gutmann, 2004). In contrast to elitist democratic theories, which overwhelmingly preference the delegation of responsibility for deliberation to an exclusive class of politicians, administrators and experts (Brennan, 2016; Lippmann, 1946; Schumpeter, 2013), the majority of deliberative democrats emphasise the importance of direct participation in deliberative processes by all relevant stakeholders (Bohman, 1998; Cohen, 1989; Dryzek, 2001; Thompson & Gutmann, 2004). From this perspective, outcomes can be considered to be legitimate only 'to the extent that they receive reflective assent through participation in authentic deliberation by *all* those subject to the decision in question' (Dryzek, 2001, p. 651).

While prioritising direct participation over-representation may help to circumvent some of the logistical challenges faced by electoral forms of representation at the transnational level, in doing so, critics observe how deliberative democrats risk generating an entirely different set of problems, most notably relating to the deliberative capacity of participants and scalability (Parkinson, 2003).

Firstly, while critics such as Posner (2005) and Brennan (2016) acknowledge the normative justification for the inclusion of all relevant actors, they nevertheless raise concerns about the effects that greater citizen participation could have on the effectiveness of transnational institutions as well as the quality of their substantive outputs. Specifically, they question the extent to which all those affected by a particular issue can be expected to possess the required level of deliberative capacity to contribute effectively and rationally to the deliberations, as well as the apparent assumption that their

inclusion will necessarily lead to a more informed or rational outcome (Brennan, 2016; Posner, 2005; Schumpeter, 2013). For theorists such as Schumpeter (2013) and Lippmann (1946), attempts to accommodate laypersons in technical decision-making, risks jeopardising the quality of deliberative outputs, since most participants are unlikely to possess the requisite expertise or technical knowledge necessary to participate effectively. Instead, they recommend a more minimalist approach to inclusion, in which decision-making authority is conferred only upon an elite group of experts or politicians, and the role of the public is constrained to participation in cyclical elections. By placing such restraints on participation, they argue that governing institutions will be better able to balance the need for public interest representation while also maintaining the coherence and effectiveness of the process.

This problem of deliberative competence is arguably particularly acute in the context of transnational technocratic institutions such as standards development bodies, where the highly technical nature of discussions requires participants to possess a certain level of expert knowledge in order to contribute actively or effectively to deliberations. In such contexts, commentators observed how attempts to broaden participation will likely fail to deliver the types of substantive benefits that deliberative democrats desire since non-experts will in most cases lack adequate comprehension of the issues at hand (Jakobs, 1998).

Responding to these critiques, many deliberative theorists have noted how the apparent opposition between expert and lay knowledge often overlooks the manifold ways in which non-experts can positively contribute to complex and even technical decision-making processes. Fischer (2000), for example, observes how in relation to moral or ethical considerations, scientists, technical experts, and policy-makers have no greater expertise than citizens. By including a diverse range of actors, therefore, it is argued that decision-makers will be able to gain a broader understanding of the social implications of their decisions and thus help to avoid controversy or unforeseen consequences (Habermas,

1985; Rawls, 2001; Thompson & Gutmann, 2004). Furthermore, some deliberative theorists also observe how the act of participating itself may help non-experts to develop their deliberative capacity by providing them with the opportunity to inform themselves of the issues (Doble, 1995; Joss & Durant, 1995).

In addition to the problem of deliberative competence, some critics have raised concerns about the scalability of deliberative practices to the transnational level. Specifically, critics of deliberative democracy note how, with the exception of deliberations in which the number of stakeholders is minimal, direct participation can quickly make deliberative processes unruly and impractical (Mutz, 2006). As Dahl notes, 'if an association were to make one decision a day, allow ten hours a day for discussion, and permit each member just ten minutes – rather extreme assumptions [...] – then the association could not have more than sixty members'(Dahl, R. A., 1990: 67-68)⁶.

As with the problem of deliberative competence, the challenge of scalability is arguably particularly acute within the context of transnational technocratic institutions and in particular web standards bodies, where the global nature of the issues discussed mean that those counted as stakeholders could justifiably include anyone capable of connecting to the internet via a web browser⁷. In the case of the W3C for example, the need to limit the scope of participation in order to maintain procedural efficiency, was cited by the consortium's founder Tim Berners-Lee, as one of the main motivations behind his decision

⁶ One possible solution to the problem of scalability is to conduct deliberations through highly structured interactions or otherwise impose procedural constraints on deliberative encounters, for example by limiting the time allocated to individuals to speak. In doing so, it may be possible to alleviate some of the concerns around time whilst also ensuring that the time and resources needed to deliberate are divided more equitably among participants. Critics note, however, that such practices may limit the scope of deliberations – since there is unlikely to be sufficient time or resources allotted to each participant in order to achieve a meaningful interaction. As a consequence, it is argued conflicting or divergent perspectives risk being downplayed in favour of weak consensus statements (Jakobs, 1998).

⁷ Since it now seems inevitable that by the end of the century most if not all of the billions of people who are currently without access to the internet will be connected, this argument could be extended even further to include those whom, whilst not presently connected to the internet, could nevertheless arguably still have a future stake in the outcome of decisions related to current web standards.

to restrict direct participation in the process to fee-paying member organisations and invited experts (Berners-Lee, 2000).

By highlighting the limitations of large-scale deliberative practices both in terms of deliberative competence and scalability, critics draw attention to what they perceive to be an inherent tension within deliberative theory between normative commitments to inclusivity and direct participation on the one hand, and deliberative quality and the effectiveness of transnational decision-making processes on the other. For critics, any deliberative fora that claim to provide genuine opportunities for participants to deliberate in a comprehensive and meaningful way must necessarily place limitations on who can participate (Brennan, 2016; Posner, 2005; Schumpeter, 2013). Given the global effects of technical web standards, it is clear that direct participation by all relevant stakeholders is not a realistic or feasible approach to ensuring an inclusive process. If users and developers cannot participate directly in the process, however, then this leaves open the question of how their views should be represented?

In response to critiques of direct participation, recent deliberative theorists have sought to deemphasise the importance of direct stakeholder involvement in deliberative processes, in favour of a more selective approach in which the interests of the public are represented by 'political trustees' (Eckersley, 2004). In particular, many scholars have highlighted the important role of civil society groups, whose democratising potential lies in their ability to enhance the representation of marginalised societal groups by channelling their views to policy-makers (Tallberg & Uhlin, 2011). In this way, scholars argue that the problem of under-representation may be circumvented through the inclusion of organisations whose professionalism, expertise and experience of policy-making processes mean that they can represent the viewpoints of minority or marginalised groups more effectively than would be possible if those groups were to participate directly in the process themselves (Steffek & Hahn, 2010; Tallberg & Uhlin, 2011). From this perspective, in order for a standards

body to demonstrate its inclusivity, it would simply need to evidence a sufficient level of participation by civil society groups.

While this approach appears to resolve the problem of scalability, critics such as Peruzzotti (2006) nonetheless question the extent to which civil society actors can adequately fulfil the role of credible representatives of disadvantaged stakeholder groups. Peruzzotti observes, for example, how in most cases civil society actors themselves lack the democratic credentials of publicly elected bodies and are often unaccountable to those they claim to represent. Others meanwhile note how, far from reflecting the interests of those least able to represent themselves, civil society groups can at times become detached from the broader public interest, seeking instead to promote their own narrow political agendas (Edwards, 2000; Kohler-Koch, 2010). In the absence of formal electoral mechanisms, therefore, critics argue that any so-called 'representatives' will inevitably be unaccountable to those they claim to represent. Finally, Parkinson (2003) highlights how a reversion to a more selective or representative approach to inclusion, will also inevitably introduce the problem of whom to include. As Parkinson (2003, p. 181) himself observes; 'deliberative decisions appear to be illegitimate for those left outside the forum while bringing more than a few in would quickly turn the event into speech-making, not deliberation'.

In response to these concerns, some deliberative theorists have gone further, arguing that efforts to ensure the inclusion of all relevant viewpoints within deliberative processes should not be limited to the representation of individuals or social groups, but should more importantly focus on the representation of viewpoints or discourses themselves - defined as 'categories and concepts embodying specific assumptions, judgments, contentions, dispositions, and capabilities' (Dryzek & Niemeyer, 2008, p. 481). In this way, Dryzek (2001, p. 660) argues that interpreting inclusivity should involve, 'detaching the idea of legitimacy from a headcount of... reflectively consenting individuals conferring legitimacy

instead on collective agreements which are consistent with the “constellation of discourses”.

In elaborating their notion of ‘discursive representation’, Dryzek and Stevenson (2012) distinguish between the *public space* of opinion formation and the *empowered space* where collective decision-making takes place⁸. Within this framing, the legitimacy of a deliberative forum can be judged by the accuracy with which the plurality of discourses present within the public space – including radical, subversive or counter-discourses - are transmitted to the empowered space (Dryzek & Stevenson, 2012)⁹. Thus, in the context of standardisation, a discursively inclusive organisation would be one that was able to successfully integrate broader discussions of matters of public concerns with its development process.

By emphasising the importance of discursive representation over direct participation, Dryzek and Stevenson (2012) claim to be able to overcome concerns about the effect of large-scale participation on the effectiveness of institutions, since the approach places no requirements on the number or type of individuals that need to participate. At the same time, by adopting a discursive approach to inclusion, they also claim to be able to avoid the risk of certain viewpoints not being adequately represented by delegates, and therefore the prospect of so-called ‘enclave deliberations’ in which a small number of hegemonic discourses dominate deliberative spaces to the exclusion of marginal voices (Bäckstrand, 2013; Dryzek & Niemeyer, 2008; Dryzek & Stevenson, 2012).

⁸ This approach to deliberative democracy builds upon Habermas’ earlier distinction between the processes of opinion-formation in the public sphere and will-formation in formal decision-making institutions. Furthermore, this distinction between the empowered and public spaces can also be understood in the context of a broader ‘systemic turn’ in deliberative theory which interprets the act of deliberation as a polity-wide phenomenon (Mansbridge et al., 2012).

⁹ For Dryzek the means through which discourses in the public space can influence deliberations in the empowered space is captured by the concept of *transmission mechanisms*. These can include the work of activist campaigns and social movements or formal and informal links between relevant actors in the public and empowered spaces (Dryzek, 2000, 2012).

Despite the obvious applicability of the concept of discursive inclusion to transnational technocratic governance, to date, the inclusivity of standards development organisations has most commonly been assessed in relation to the diversity of their memberships (representation) and the scope of participation within their technical working groups (participation). While, such metrics provide useful insights into the overall openness of standards processes, they nevertheless only offer researchers a superficial understanding of the organisation's inclusivity, since - as described above - the mere presence of a stakeholder group does not necessarily suggest that they will be effective in representing their own interests or the interests of those they supposedly represent.

As such, in order to provide a more comprehensive and accurate assessment of inclusivity within standards bodies, for the purpose of this study, the criterion of inclusion will be assessed not only in relation to representation and participation but also the discursive inclusivity of deliberations. To be considered as procedurally legitimate, therefore, standards bodies must demonstrate not only a diverse and active membership but also the ability to channel any publicly expressed concerns about its work into the deliberations of its technical working groups.

Transparency

Despite the importance of standards to the global economy, the transparency of standards development processes can vary dramatically from organisation to organisation. While some standards bodies such as the IETF have been commended for the openness with which their working groups operate (Fromkin, 2003), others remain far more secretive and so less exposed to external scrutiny. Historically, such closed working practices have been justified on the grounds of corporate confidentiality and the privacy of individual members. However, as the intersection of standards development and policy-making has become increasingly evident, there have been growing calls for standards bodies to publicise their activities and be more transparent in the way that they operate.

From a deliberative democratic perspective, the principle of transparency has for a long time been considered as a cornerstone of procedural legitimacy. For many deliberative democrats, transparency can help to ensure that participants act authentically and are held accountable for their decisions (Habermas, 2006; Mena & Palazzo, 2012). Furthermore, theorists claim that transparency may also serve to encourage participants to provide the best possible justifications for their premises and conclusions, thereby increasing the rationality and quality of collective decision-making (Thompson & Gutmann, 2004).

Although some theorists tentatively warn of possible side effects to excessive publicity including, political point-scoring or political theatre, most of these concerns generally relate political decision-making processes at the national level which may be subject to high levels of media attention (Chambers, 2003; Stasavage, 2007). At the transnational level, by contrast, there is broad recognition of the normative importance of transparency and public awareness. This is particularly true in the case of technical standards bodies, whose work is often esoteric and obscure to most (Kica & Bowman, 2012; Uhlin, 2010).

Procedurally speaking, transparency as a criterion of normative legitimacy is relevant throughout the deliberative process from agenda-setting to decision-making and can refer to the accessibility of general information relevant to the deliberations as well as the content of the deliberations themselves. In the case of the former, transparency is interpreted in terms of the availability of the all information necessary for participants to engage fully in the decision-making process. Such materials could include, for example, requirements documents, technical specifications or policies. The availability of this information, allows participants to inform themselves of the relevant facts and so develop their own opinions prior to the deliberations themselves (Nanz & Steffek, 2005).

The second aspect of transparency relates to the public accessibility of the records of the deliberations themselves as well as the openness of the decision-making process. This

aspect of transparency is often considered as critical to deliberative processes since the knowledge that their contribution will be available for public scrutiny often motivates participants to engage in more respectful and constructive discourse. Furthermore, the transparency of decision-making also encourages accountability, since there will be a public record of the preferences and opinions expressed by stakeholders during deliberations.

Given the growing pressure on standards bodies to adopt more open working practices, for the purpose of this study the criterion of transparency will be used as an indicator of procedural legitimacy. In order to be considered procedurally legitimate, therefore, it is expected that standards bodies make all records relating to the development of their standards publicly available. This might include the publication of documents such as technical specifications and policies as well as records relating to working group deliberations including meeting minutes and mailing list archives.

Deliberativeness

Given that the development of any standard will necessarily require the interaction of a diverse range of stakeholders, it is widely accepted that standards bodies should – at a bare minimum – help to facilitate discussions between competing interest groups and ensure that any concerns raised during the process are appropriately and adequately addressed. In some instances, the role of initiating discussions is delegated to working group chairs who often act as the unofficial moderators of working group discussions. In other cases, norms of reciprocity are more formally codified as part of the standards process itself. For example, in the case of the W3C, the consortium's process document explicitly establishes as a precondition of a specifications progression along the standards track, the requirement that chairs directly address and responded to all formal objections (W3C, 2017d).

For deliberative theorists such as Bohman (1996), deliberations are at their most basic social processes, involving not only the giving of opinions but also the listening and responding to the opinions of others. Without due consideration of the arguments of others, scholars warn that deliberations risk becoming simple acts of speech-making, in which competing arguments are never brought into productive dialogue. Given that deliberative theory distinguishes itself from aggregative theories of democracy on the basis that the opinions of individuals are not fixed but malleable (and therefore amenable to ‘the force of the better argument’) the requirement that deliberations be interactive, and thus, facilitate the engagement of individuals with arguments with which they might disagree, is a central component of procedural legitimacy (Habermas, 1985).

On the one hand, by ensuring that all relevant opinions are fully considered, theorists claim that participants will be better placed to identify common values as well as possible areas of compromise (Bohman, 1996; Cohen, 1989; Habermas, 1985). On the other hand, deliberative democrats observe how the criterion of deliberativeness is crucial to avoid certain forms of ‘internal exclusion’, whereby minority demands are included, but patronised, treated dismissively or simply ignored (Young, 2002)¹⁰. In this way, deliberative theorists highlight the importance of deliberativeness not only from a pragmatic perspective but also a normative perspective, noting how the mere presence or visibility of a given discourse within a debate does not necessarily guarantee that decision-makers will genuinely consider it as part of the decision-making process.

Given the normative importance attributed to the principle of reciprocity by both the standards community and deliberative scholars, for the purpose of this research the criterion of “deliberativeness” will be used as an indicator of procedural legitimacy. For a

¹⁰ This need for deliberative interactivity is sometimes referred to by principle of reciprocity. Graham (2002, p. 45) defines reciprocity as “the taking in (listening, reading) of another’s claim or reason and giving a response”. For Schneider (1997, p. 74) meanwhile, reciprocity “refers to the notion that people are engaged in conversation with each other, and that their messages are reflected upon and discussed by others”.

standards body to be considered procedurally legitimate, therefore, it is crucial that discourses and opinions are not merely present within discussions but also actively engaged with and addressed throughout the process.

Justification

Historically, the relative homogeneity of the web standards community together with the technical nature of standardisation has meant that disagreements regarding standards development have mostly related to technical differences. Given the technical communities preference for resolving such issues through rigorous testing and 'running code', the need for participants to explicitly justify their opinions has until recently been quite limited. However, as the increased prevalence of techno-policy standards has begun to introduce value-based considerations into the development of standards, there have been growing demands for standards participants to not only express their preferences but also to justify their positions in relation to the increasing number of public policy objectives, which they pursue through standardisation (Morris, 2011). While such demands are not unreasonable given the potential social impact of techno-policy standards, precisely what forms of argumentation standards participants are expected to engage in or what level of justification would be deemed sufficient remains unclear.

For deliberative democrats, the expectation that participants not only state their preferences but also provide reasons or evidence which explains or justifies those preferences is an important aspect of legitimate deliberative governance (Steenbergen et al., 2003). By ensuring that reasons or evidence sufficiently support all viewpoints, deliberative democrats claim that participants will be better equipped to understand the positions of their opponents, and so will be better placed to identify possible areas of compromise or common ground (Graham, 2002). Equally, they observe how by requiring deliberators to justify their beliefs, the arguments presented will be more accessible to critique and scrutiny, thereby enabling participants to more easily offer counter-evidence. In this way, deliberative democrats argue that 'justification' must be considered as a vital

aspect of any deliberative process, providing as it does, both a basis on which the development of consensus is possible, as well as a mechanism through which deliberators can be held accountable. Furthermore, without reason-giving, theorists claim that deliberation will simply degrade into a process of preference statement and aggregation (Wilsdon & Willis, 2004).

In addition to the general requirement that participants provide reasons to support their preferences, early deliberative democrats, including Habermas himself, made a number of normative demands concerning the precise form and substance of the justifications given. In relation to the form, early deliberative democrats argued that in order to be considered legitimate, reasons should be expressed logically or rationally (Habermas, 1985). Echoing Aristotle's claim that laws could be legitimate only to the extent that they were the product of 'reason unaffected by desire' (Aristotle, 1943), early deliberative scholars argued that requiring arguments to be expressed rationally would prevent participants from presenting irrational, subjective or spurious claims which lack supporting evidence.

By formulating their concept of deliberation in terms of a distinction between rational and irrational, or legitimate and illegitimate forms of communication, critics argue that deliberative democrats risk reinforcing existing hierarchies as well as excluding forms of knowledge which do not meet the required levels of scientificity or erudition. Drawing on post-positivist critics of science, and more specifically on the work of Michael Foucault, critics claim that this rationalist bias of first-generation deliberative democracy neglects the normalising and coercive power involved in the designation of a particular form of communication as rational or legitimate (Dean, 1996; Mouffe, 1999; Young, 2001). They observe for example, how by designating a particular form of communication (most commonly masculine and western forms) as "rational", deliberative democrats effectively force participants to internalise the rules and norms of that mode of deliberation or else risk being excluded from the public sphere (Dean, 1996; Villa, 1992). The effect of this, critics argue, is to privilege and reinforce existing hierarchies of power and influence, while

excluding those radical or marginalised groups which do not conform to the 'rational' forms of communication prescribed by deliberative elites.

In this way, critics such as Young (2001) and Mansbridge et al. (2010) observe how early versions of deliberative democratic theory have tended to discount a wide range of communicative modes, including protest, activism, humour, and irony. While these forms of communication do not conform to the supposedly rational forms of discourse prescribed by early elaborations of deliberative theory, they highlight how they can nonetheless enrich deliberations, offering alternative means for sometimes marginalised discourses to be injected into the political process. As Mansbridge et al. (2010, p. 67) explain 'stories can establish credibility, create empathy, and trigger a sense of injustice, all of which contribute directly or indirectly to justification'.

For many, these forms of exclusion are particularly concerning in the context of technocratic organisations such as standards bodies, where the highly technical nature of the work conducted often means that there are clear demarcations between expert and non-expert, and between technical and non-technical discourses (Estlund, 2003; Hamlett, 2003)¹¹. Within such forums, commentators observe how the relative influence of participants is often closely correlated to their perceived technical expertise or subject knowledge, with non-expert or non-technical discourses often marginalised or excluded altogether (Hamlett, 2003; Lövbrand, Pielke Jr, & Beck, 2011)¹². As such, when considering the appropriate forms of argumentation which should be present in order to

¹¹ For STS theorists, the normative value of deliberative theory is its potential to open up processes of technological development to critical interventions by non-experts. By prescribing a rational form of discourse which privileges expert knowledge, many observe how early iterations of deliberative theory seem to enable precisely the kinds of coercion and elitism that STS scholars seek to avoid (Lövbrand, Pielke Jr, & Beck, 2011).

¹² The exclusion of lay voices is not uncommon in technical fora where citizen rationality is often constructed as ill-equipped to deal with the complex issues associated with modern science and technology. As Hamlett (2003, p. 125) observes, 'often in this account, the public is depicted as inattentive to potentially troublesome issues in the development of new technologies, and if they do get involved, their participation is sporadic, uninformed, and too often driven by misinformation and even hysteria'.

legitimise a standards process, it is important not to prioritise technical rationality over other forms of reason unfairly.

In addition to designating an appropriate *form* that justification should take, Habermas and many other early deliberative democrats also sought to specify the appropriate *content* of justifications. Specifically, they argued that in order for deliberation to be legitimate the justifications or reasons given by participants should be expressed in terms of the 'common good', as opposed to self-interest. As Habermas (1985, p. 285-286) himself put it, communicative action requires that;

'participating actors are not coordinated via egocentric calculations of success, but through acts of understanding. Participants are not primarily oriented toward their own success in communicative action; they pursue their individual goals under the condition that they can coordinate their action plans on the basis of shared definitions of the situation'.

Thus, for Habermas, the production of a rational consensus among participants in deliberative processes is possible only to the extent that they are willing and able to look beyond their own narrow strategic interests. In order for deliberations to achieve their goal of a mutually agreeable outcome, therefore, scholars argue that deliberative fora must ensure that all justifications and reasons are presented in a way that will be acceptable to all participants.

As with the stipulation that justifications be expressed rationally, deliberative democrats' attempt to exclude strategic interests has also attracted criticism. Firstly, critics question the extent to which individuals can realistically be expected to put to one side their strategic interests, or for that matter, the extent to which doing so would be desirable. Parkinson (2003) for example, notes how an individual's pre-formed preferences are often that which motivates them to participate in deliberative processes in the first place. By rejecting the validity of these interests, he argues, a deliberative forum runs the risk of

being perceived as procedurally unfair, and thus illegitimate, by those whose views it has excluded. In the context of web standardisation, this stipulation seems particularly strange since stakeholders who join standards bodies do so explicitly for the purpose of defending or promoting their own interests.

Similarly, others have argued that far from representing a barrier to consensus, the inclusion of strategic or private interests can be an essential part of developing a common understanding of the problems to be resolved, and therefore the range of acceptable options available. Mansbridge et al. (2010) for example, note how it is important for minority or otherwise marginalised groups to have the opportunity to express their personal grievances and concerns, which might otherwise be neglected or remain unheard. As Mansbridge et al. (2010, p. 72-75) put it,

‘including self-interest in deliberative democracy reduces the possibility of exploitation or obfuscation, introduces information that facilitates reasonable solutions and the identification of integrative outcomes, and also motivates vigorous and creative deliberation. Including self-interest in the regulative ideal of deliberative democracy embraces the diversity of human objectives as well as the diversity of human opinions’ (Mansbridge et al., 2010: 72-75)

In response to these criticisms, more recent deliberative theorists have more sought to soften their position both in regards to rationality and strategic interests. Instead, they attempt to overcome the exclusions inherent in designating certain types of justification legitimate, by proposing more inclusive conceptual models of deliberation which permit specific uses of strategic bargaining as well as non-conventional forms of argumentation such as story-telling or humour (Sanders, 1997). For many contemporary deliberative theorists, what is of greater concern is not the precise form or substance of a particular justification or reason, but simply whether arguments are supported by justifications and

therefore accessible to the scrutiny and critique of other participants at all (Bohman, 1996; Manin, 1987).

Given the understandable concerns regarding the evaluation of deliberative quality in relation to a specific form of justification, for the purposes of this study, the 'rationality' of deliberations will be assessed purely in terms of the *presence* of justification. Thus, while participants are not expected to engage in any particular form of argumentation, in order for a standards body to be deemed legitimate it is nonetheless anticipated that when expressing their preferences standards participants will provide some evidence or justification for their choices.

Respect

Like all negotiations involving a diverse range of interests, web standards development processes often require participants to express their opinions and preferences in a robust and straightforward way. While such exchanges are to be expected - and to some extent encouraged - within the standards community, it is nonetheless broadly recognised that in order for standards processes to remain effective and legitimate, it is essential for contributors to conduct themselves in a civil and professional manner (W3C, 2015a).

The need for standards participants to treat each other with mutual respect was recognised at an early stage by web developers, who quickly set about formulating a set of general rules for web-mediated interactions or what has become known as netiquette (Hambridge, 1995)¹³. More recently, these social norms have been formally codified into the various codes of conduct which are used to govern the behaviour of contributors to the mailing lists of most contemporary web standards bodies. These guidelines commonly

¹³ The RFC 1885 Netiquette Guidelines represent an early attempt to codify norms of behaviour for web-mediated discussions. In the document, Sally Hambridge (1995) outlines a long list of do's and don't, including the suggestions to 'be conservative in what you send and liberal in what you receive', 'use mixed case. UPPER CASE LOOKS AS IF YOU'RE SHOUTING', and 'wait overnight to send emotional responses to messages'.

reference the need for participants to ‘treat each other with respect, professionalism, [and] fairness’ and to ‘communicate constructively and avoid demeaning or insulting behaviour or language’ (W3C, 2015a). However, precisely how participants are expected to interpret or enforce these rules is by no means clear and in practice is often left to the discretion of working group chairs who regularly acts as mailing list moderators.

Although the issue of ‘respect’ is in some ways closely related to that of ‘rationality’, many deliberative theorists nevertheless emphasise the importance of mutual respect for both listeners and speakers alike as an indicator of procedural legitimacy in its own right. As Jane Mansbridge et al. (2010, p. 2-3) acknowledged, ‘participants should treat each other with mutual respect and concern. They should listen to each other and give reasons to one another that they think the others can comprehend and accept’.

The notion that participants in a deliberation orientated towards consensus should be respectful may at first glance appear to be self-evident. Nevertheless, within the literature, there exists a degree of controversy concerning the precise definition of respect and whether or not respect should be accorded to *all* arguments regardless of how irrational or distasteful they may be.

As with concerns regarding the requirement for justifications to be rational, critics argue that by mandating that speech must be ‘respectful’ deliberative democrats risk stifling or excluding certain forms of communication, such as protest or humour, which are often present within deliberations (Testa, 2012; Young, 2001). For Young (2001), these types of confrontational or adversarial forms of discourse, far from being detrimental to deliberations, are critical to the proper functioning of a deliberative democracy, which should hold at its core, a commitment to the robust contestation of discourses and ideas.

Such observations highlight the need to make a couple of important distinctions regarding the acceptable use of confrontational forms of discourse. Firstly, it is necessary to distinguish between an impassioned or aggressive rebuke of a particularly distasteful

viewpoint by countering its arguments or debunking its premise on the one hand, and the complete disregard of that viewpoint from consideration altogether because it is distasteful and therefore beyond respectful engagement, on the other. While the former is to be expected within any discussion of a controversial topic, the latter risks leading to forms of 'internal exclusion' that are hard to justify on normative grounds and which run contrary to the basic presuppositions of deliberative theory (Young, 2002). As Rostbøll (2008, p. 103) points out;

'[a] basic assumption underlying deliberative democracy, as I see it, is that no one has privileged access to truth or the true interests of others. The only way to arrive at judgements that have the presumption of having right on their side is through public processes of deliberation where everyone is free and able to participate.'

The second important distinction to make regarding the use of confrontational rhetoric is between a robust engagement with the *content* of an opponent's argument and aggressive criticism of the speaker as an individual or their right to participate in the discussion. In the case of the latter, deliberative theorists observe how the direct criticism of individuals can undermine their willingness to engage or make compromises. Others meanwhile note how *ad hominem* attacks may also result in indirect forms of exclusion, such as in cases where personal attacks cause an individual or group to leave or abstain from discussions altogether (Bächtiger, Steenbergen, & Niemeyer, 2007).

Whilst in practice it may be difficult for participants to hold no preconceptions about the quality or credibility of an opponent's arguments based on personal traits such as their character, reputation, or accreditation, scholars nevertheless stress the need for arguments to be judged on the basis of their rationality and the credibility of the reasons supporting them (Rostbøll, 2008). Failure to do so may ultimately lead to a regression to a hierarchical form of governance, in which the ability to influence the outcome of a

deliberation is premised on social status or perceived expertise of participants rather than the quality of the arguments which they present (Rostbøll, 2008).

Given the potential risks involved in defining the concept of respect too broadly, to assess the legitimacy of the standards development processes, 'respect' will be interpreted simply as the absence of personal attacks or unjustified neglect or dismissal of an individual's views on the basis of their identity. To be considered procedurally legitimate, what is important, is not necessarily that participants respect each other's opinions but that they respect each other and give due consideration to all arguments and opinions presented regardless of the race, gender, reputation, or credentials of the person expressing them.

Constructiveness

In the context of web standardisation, consensus – or more precisely “rough consensus” – is commonly perceived as the ultimate objective of deliberations and the primary metric by which the success and legitimacy of standards processes are measured. While precise definitions of 'rough consensus' vary, most commentators tend to interpret the term to mean the absence of strong or principled objections to proposals (Crocker, 1993). Given the shared principles and values of the early web standards community, until quite recently the goal of achieving rough consensus could largely be considered as a realistic one. However, as web standards development processes have become increasingly contested and politicised, commentators observe how widespread agreement among participants on technical proposals is now rarely guaranteed (Morris, 2011). In this context, some commentators have begun to question what forms of consensus are sufficient to legitimise technical outputs, with some even casting doubt on whether the explicit pursuit of consensus as a deliberative objective is still realistic or even desirable (Malcolm, 2013).

For many early deliberative democratic theorists, rational consensus, achieved through an open and deliberative process, represented the ultimate objective of any decision-making

process and the 'gold standard' of political justification and legitimacy (Dryzek, 2012). By orientating deliberative processes towards the development of a broad-based consensus, theorists argued that deliberative democratic fora could avoid the kinds of coercion often associated with majoritarian decision-making since processes would by their very nature produce collective decisions to which all participants give their tacit assent (Cohen, 1989; Dryzek & Niemeyer, 2006; Habermas, 1985).

Habermas recognised that within any political community there would inevitably exist a plurality of interests. Nevertheless, by engaging in a free and open debate, he claimed that participants would be able to identify common values and norms which together could form the basis of collective action, without having to resort to metaphysical foundations (Habermas, 1985). As Cohen (1989, p. 78) observes, from this perspective the 'characterisation of an ideal deliberative procedure links the formal notion of deliberative democracy with the more substantive ideal of a democratic association in which public debate is focused on the common good of the members'.

However, just as deliberative democrats' determination that participants engage in 'rational' discourse drew strong criticism from poststructuralists who saw such prescriptions as exclusionary, the call for participating actors to put to one side their differences in pursuit of the 'common good' has also proved to be a soft target for critics of deliberative theory. By projecting rational consensus as the ultimate objective of deliberations, critics note how deliberative democrats implicitly assume the existence of an objective and universal common good which is knowable to participants if only their deliberative interactions can be procedurally constrained in such a way as to generate mutually acceptable justifications. Thus, although appeals to a universal common good may serve as a useful cognitive standard for the evaluation of deliberative processes, for critics, what constitutes the common good cannot be considered as an adjunct to the deliberations, but is crucially, itself a matter of contestation (Dahlberg, 2007a; Kadlec & Friedman, 2007; Mouffe, 1999).

In contrast to deliberative democrats' expectation that justification from the perspective of the common good will inevitably lead to consensus, critical pluralists argue that the sheer plurality of voices involved in modern politics means that, regardless of its procedural legitimacy, any decision-making process will be unlikely to achieve consensus. As such, consensus-building, they argue, will always require some form of reductionism or compromise and so will inevitably also involve a certain degree of coercion (Dahlberg, 2013; Fraser, 1990).

For Mouffe and others, political processes orientated towards consensus will always tend to privilege those existing political hierarchies and hegemonic discourses which are powerful enough to dominate preceding at the expense of marginal groups or counter-discourses (Mansbridge et al., 2010; Sanders, 1997). As Mouffe (2000, p. 22) herself comments, 'to negate the ineradicable character of antagonism and aim at a universal rational consensus- that is the real threat to democracy. Indeed, this can lead to violence being unrecognised and hidden behind appeals to "rationality," as is often the case in liberal thinking'. Thus, for critical pluralists such as Mouffe, the objective of deliberation is not to achieve consensus but simply to facilitate the introduction of counter-publics into the political domain which can unveil and challenge the prejudices and assumptions of hegemonic discourses.

Many of these concerns regarding the coercive effects of consensus have more recently been echoed by STS theorists, who like poststructuralist critics are cautious of the claims of universality implicit in early versions of deliberative theory (Lövbrand et al., 2011; Stirling, 2008). In the same way that claims of a universal rationality jar with STS's constructivist ontological allegiances, scholars such as Lövbrand et al. (2011, p. 6) observe how deliberative democracy's emphasis on consensus over plurality is counter to the work of many STS theorists, for whom, the ultimate purpose of citizen participation in technological processes is 'not to reach the truth, or even agreement, on the common good.... [but rather] to make explicit the plurality of reasons, culturally embedded

assumptions and socially contingent knowledge that can inform collective action'. Thus, for many STS theorists and critical pluralists, consensus as an objective of deliberations is not only unrealistic but also risks obscuring genuine disagreement and as such marginalising dissenting voices.

In attempting to address this problem and bridge the competing ideals of consensus and plurality, Niemeyer and Dryzek (2007) have proposed abandoning attempts to prescribe consensus as the only legitimate outcome of deliberations in favour of a less demanding requirement or what they describe as 'meta-consensus' (Dryzek & Niemeyer, 2006; Niemeyer & Dryzek, 2007)¹⁴. At its most basic, meta-consensus refers to 'a set of agreed forms of deliberative outputs (acceptable domain of preferences) that are the product of a similarly meta-consensual (mutually acceptable) domain of supporting values and beliefs that are agreed as legitimate and worthy of consideration by all, even if not all individuals come to actually agree with them or their implications' (Bächtiger & Steenbergen, 2008, p. 4). In contrast to what they describe as 'simple consensus' which requires unanimous agreement about deliberative outputs, meta-consensus simply requires participants to agree on an acceptable *range* of values, beliefs and preferences.

In explicating their theory, Niemeyer and Dryzek (2007) begin by distinguishing between three types of consensus: normative, epistemic, and preference. Normative consensus refers to an agreement about the values and norms which inform the decision-making process. The second, epistemic consensus, pertains to an agreement about how specific actions or outcomes map onto those values in terms of cause and effect. Finally, the third, preference consensus relates quite straightforwardly to an agreement about what actions should be taken. Simple consensus, such as that promoted by early deliberative

¹⁴ Despite their acknowledgement of the tensions between consensus and plurality, most second generation deliberative theorists still maintain an understanding of consensus or at the very least compromise as the ultimate aim of any deliberative forum. Indeed, countering the critiques of Mouffe (2000) and other poststructuralists, Dryzek (2012) observes how the notion of agonistic democracy advanced by critical pluralist must itself rely on the possibility of compromise.

democrats, would, Dryzek argues, ideally require agreement on all three of these aspects. Crucially however, Niemeyer and Dryzek (2007) claim that each of these elements of consensus has its own 'meta' counterpart which structures the process of deliberation.

Firstly, normative meta-consensus implies a 'reciprocal understanding and recognition of the legitimacy of the values held by other participants in political interaction' (Dryzek & Niemeyer, 2006, p. 642). As such, the development of normative meta-consensus indicates that participants agree on the range of values that should be considered as part of the deliberations though not necessarily the priority that should be given to these values in their application to a particular proposal or policy. For Dryzek and Niemeyer (2006), one of the primary tasks of any deliberation encounter is to identify and make explicit commonly held values which can sometimes become obscured by the strategic actions of participants in their attempts to undermine the arguments of their opponents. Such values, it is argued, could, once revealed, form the basis of compromise and mediation as well as contribute to the overall respectfulness and rationality of deliberations. In the context of the standards development, this aspect of meta-consensus would relate to the agreement on the values that need to be considered in the development of a given standard such as its effects on interoperability, competition, user rights or innovation.

Secondly, epistemic meta-consensus refers to an agreement on "the credibility of disputed beliefs, and their relevance to the norms that define the issue at hand" (Dryzek & Niemeyer, 2006, p. 640). A deliberation can be judged to have achieved epistemic meta-consensus if participants' beliefs about the effects of a proposal or policy are accepted as credible by their opponents. Importantly, this does not mean that agreement is reached on the normative weight or likelihood of the belief, only that the belief is credible and worthy of consideration. Dryzek and Niemeyer (2006) observe how the complexity and uncertainty associated with certain technical decisions can often preclude definitive explanations of phenomena, meaning that it is sometimes necessary to allow for equally credible beliefs about the effects of decision-making outcomes to co-exist. In the context

of the standards development, epistemic meta- consensus would relate to an agreement regarding the likely effects of a given proposal or standard.

The final form of meta-consensus, preference meta-consensus, refers to an agreement regarding an acceptable range of alternative proposals. For Dryzek (2012, p. 106), preference meta-consensus is valuable to the extent that 'it makes social choice less vulnerable to arbitrariness, instability, manipulation, by clever strategists'. Achieving preference meta-consensus thus reduces the opportunity for individuals to sabotage deliberations by proposing irrelevant or implausible alternatives, or conversely, to influence the outcome by unduly excluding feasible alternatives from the discussion. In relation to the development of technical web standards, preference meta-consensus would refer to the acceptance by participants of the plausibility of a set of counter-proposals.

By focusing on consensus at the meta-level rather than the simple level, Dryzek and Niemeyer (2006) argue that it is possible to ease the tension between the competing ideals of plurality and consensus and so avoid many of the potential pitfalls of early versions of deliberative theory identified by difference democrats¹⁵. Using this approach, deliberative theory can preserve plurality at the level of simple consensus, while also achieving consensus at one or more of the meta-levels. By retaining space for disagreement, therefore, meta-consensus does not force partisan groups to change or abandon their views in the name of consensus (Pomatto, 2013).

In the sense it requires the creation of a community of participants united by their acceptance of a shared set of values, norms, and beliefs, meta-consensus can be understood as a substantive outcome of deliberative practice and thus a criterion of substantive legitimacy. However, to the extent that agreements on the various aspects of

¹⁵ It remains important to emphasise the temporality and instability of any form of meta-consensus and to realise that, when achieved, meta-consensus should not represent an end-point of deliberations but rather an interval which needs to be continually tested and re-examined.

meta-consensus inevitably determine both the scope and character of the deliberations themselves, meta-consensus can also be interpreted as an important component of procedural legitimacy. That is, since the development of meta-consensus will determine the range of values and beliefs accepted as valid as well as the array of proposals and counter-proposals to be considered as part of the negotiations, the development of meta-consensus can be seen not only as an important deliberative outcome but also as a prerequisite to productive deliberations, without which discussions become vulnerable to forms of internal exclusion and framing effects (Barisione, 2010).

Ideally, of course, the development of meta-consensus would take place prior to the start of the deliberations themselves, most preferably through an open agenda-setting process which would itself be conducted in accordance with the procedural principles of deliberative democracy. While such an approach would maximise the chance of constructive discussions, theorists note how such open and cooperative agenda-setting processes are not always practical and may not necessarily guarantee meta-consensus. In the case of the W3C for example, requirement documents and proposals are usually developed between interested parties in private or in special 'interest groups' with community and public input on specification documents only sought once they have reached the stage of a working draft (W3C, 2017c).

Give these limitations, what is crucial from a legitimacy standpoint is not that participants achieve meta-consensus prior to the deliberations beginning but rather that where disagreements over the validity of ideas, values or beliefs exist, opportunities are provided for existing deliberative frames to be challenged and for participants to work proactively to address differences in opinion by engaging in constructive exchanges orientated towards the generation of normative, epistemic and preference meta-consensus.

Given the understandable concerns regarding both the feasibility and exclusionary implications of prescribing 'simple consensus' as a deliberative objective, for the purposes of this study the less stringent concept of meta-consensus will be used as an indicator of procedural legitimacy. To be considered as legitimate, what is important is not that standards processes yield unanimous agreement on technical outputs but simply that the deliberations themselves are orientated towards the generation of meta-consensus. From a practical perspective, this means not only that there exist opportunities for participants to reframe discussions but also that participants engage in "constructive" dialogue orientated towards the identification of common values and beliefs. By taking this approach, it is possible to maintain the possibility of plurality while also remaining committed to an understanding of deliberations as constructive processes.

Conclusion

In this chapter, I have presented an original analytical framework for the assessment of techno-policy standards development processes. The framework is inspired by the work of early deliberative democratic theorists but also takes into consideration later critiques of their work, specifically in relation to their strict definitions of consensus and rationality. By interpreting these indicators of procedural legitimacy more broadly, I have attempted to present a framework which maintains the normative drive of deliberative theory while avoiding some of its more elitist and exclusionary implications. Furthermore, in developing the analytical framework for this study, I have also attempted to be sensitive to the specific context of web standardisation and in particular how commercial pressures and the technical nature of standardisation affects the types of procedures that standards bodies can realistically be expected to implement.

Having outlined the specific indicators to be included within the analytical framework, the next question becomes how each of these indicators can be studied and measured empirically. To address this question, in the next chapter I discuss the methods used to

operationalise each of the indicators above in order to assess the procedural legitimacy of the W3C in the context of its development of the Encrypted Media Extension Specification (EME).

4: Methodology

In the previous three chapters I have established the political rationale for examining the legitimacy of standards development processes, discussed how legitimacy can be conceptualised in the context of standardisation, highlighted some of the challenges of legitimation faced by web standard organisations in the wake of the web's commercialisation and outlined an analytical framework for the assessment of procedural legitimacy of web standards bodies inspired by deliberative democratic theory. In this chapter I provide an overview of the two-stage methodology, which was used to apply this framework to the case of the W3C's development of the Encrypted Media Extension specification (EME). This combined a preliminary thematic analysis of web content related to the EME specification, with an in-depth content analysis of the W3C mailing lists.

In what follows, I will outline the methodology adopted for this study, including discussions of the methods of data collection and analysis used. I begin by explaining my selection of the W3C and, more specifically, its development of the EME specification as the object of study. Following this, I describe how web sources relevant to the controversy were collected and sampled and explain how the thematic analysis of this data helped to inform the primary analysis of the mailing lists. I will then proceed to describe how data from the W3C mailing lists were collected and sampled, before finally justifying my use content analysis and describing how I applied this method to the mailing list data in order to assess the procedural legitimacy of the W3C in relation to each of the indicators described in the previous chapter.

Case Study

World Wide Web Consortium (W3C)

For the purpose of this thesis, the standards development process of the W3C was chosen for analysis. Although there currently exist dozens of large web standards

consortia, many, if not all of which face the types of challenges to their legitimacy described in previous chapters, the W3C has a number of unique attributes which made it a particularly interesting and appropriate choice as a case study.

Firstly, together with the IETF, the W3C is among the largest and most influential contemporary web standards organisations, responsible for the development of some of the web's most well-known and widely implemented standards, such as HTML and CSS¹. Like most web standards, the recommendations produced by the W3C cannot be legally enforced meaning that W3C standards are, in theory, almost entirely reliant upon the voluntary compliance of vendors to ensure their implementation. In practice, however, the reputation and influence of the W3C mean that in most cases its specifications can be considered as *de facto* standards, carrying a 'moral authority' that one observer described as 'the closest thing the Internet has to law' (Garfinkel, 1998). The privileged status enjoyed by W3C standards means that the consortium has the potential to influence the future development of web technologies globally, and as such must be considered as a key institution of internet governance.

Secondly, unlike some other well-established industry consortia, the W3C has over the past twenty-five years become progressively more open to acknowledging the impact of its work on wider issues of public policy and has even made concerted efforts to address some of the concerns regarding its legitimacy (Russell, 2014)². The apparent willingness of the W3C to acknowledge its impact on policy-making and to take proactive steps to ensure an open and transparent process has led many to perceive the consortia as an exemplar of legitimate multi-stakeholder governance and effective internet self-regulation in practice (Russell, 2011; Umpathy, 2010). An empirical examination of the procedural

¹ Together with Javascript the W3C's HTML and CSS standards form the triad of core web technologies which all web developers must learn, 'HTML to specify the content and layout of web pages; CSS to specify the presentation of web pages; and JavaScript to specify the behaviour of web pages' (Flanagan, 2006 p. 1).

² The evolution of the W3C as an institution of internet governance, including its political architecture and culture will be discussed in detail in the next chapter.

legitimacy of the W3C in the context of its development of techno-policy standards thus provides an intriguing opportunity to put the claims of the consortium's proponents to the test and determine whether its reputation as an open and transparent organisation is deserved.

Finally, despite the importance of the W3C as a standards development organisation and institution of internet governance, to date very limited empirical research into the consortium's standards development process has been conducted. Indeed, although deliberative democratic theory has previously been used to describe the legitimacy of other technical standards bodies (Fromkin, 2003; Werle and Iversen, 2006), to the author's knowledge no empirical studies of the procedural legitimacy of the W3C currently exist. As such, analysis of the case of the W3C offers the opportunity to make a significant and timely contribution to the existing literature on both standardisation and deliberative theory.

Encrypted Media Extension Specification

For the purpose of the thesis, the researcher elected to study the development of the W3C's Encrypted Media Extension specification (EME) from its initial proposal in early 2012 through to its publication as an official W3C Recommendation in July 2017.

Briefly, the EME specification – an extension to the W3C's flagship HTML standard - was a proposed W3C standard designed to enable web applications to interact with Digital Rights Management (DRM) systems to allow the playback of encrypted content within web browsers. Historically the use of DRM technologies - which are designed to impose restrictions on the functionality of digital files - as a means of preventing piracy and copyright infringement had been highly controversial, with several consumer and digital rights groups objecting to what they perceived to be the technologies negative impact on a broad range of internet policy issues, including accessibility, security and privacy, interoperability and user rights (O'Brien, 2013). For the authors of the specification, EME

was necessary to protect the rights of digital content creators and copyright holders. However, by working on a proposal that would effectively standardise a means of implementing DRM on the web, critics accused the W3C of betraying ordinary users and its founding principles in favour of the business interests of a small number of powerful corporations.

Although the W3C develops dozens of standards annually, including many that could be characterised as 'techno-policy standards', the development of the EME specification had a number of features which made it a particularly interesting choice as a case study.

Firstly, unlike the development of many other web standards, which may prompt heated technical debates between engineers but which otherwise fail to alert any wider interest, the controversial decision to publish the EME specification sparked outrage and debate across a wide variety of venues from the European Commission³ to the comments section of the Guardian news website. Unlike most other technical standards, therefore, the debate surrounding EME transcended the boundaries of the W3C and involved a broad range of actors including consumer advocacy groups, free software activists, browser developers, artists, politicians, content producers, and even members of the public. From a methodological perspective, the highly controversial nature of EME offered the perfect opportunity to assess the W3C's handling of public policy issues since such controversies are by their very nature data-rich events. STS theorists note for example, how during socio-technical controversies opponents are more inclined to express and justify their opinions publicly; assumptions which were previously implicit are made explicit, and lines of division between competing discourses and stakeholder groups are more clearly demarcated (Sismondo, 2010; Venturini, 2010)⁴. In studying the EME controversy, the

³ In response to the W3C's decision to publish the EME specification as a First Public Working Draft, Pirate Party MEP Amelia Andersdotter hosted a roundtable event at a gathering of the European Commission's European Multi-Stakeholders Platform on ICT Standardisation to discuss the role of technical standards bodies in public policy (Andersdotter, 2013b).

⁴ The methodological logic underlying the study of controversies parallels that of experimental science, where scientists study natural phenomena in states of chaos and instability. By studying

researcher thus sought to follow the advice of Bruno Latour (1987, p. 4) when he observed that ‘The impossible task of opening the black box [of technology] is made feasible (if not easy) by moving in time and space until one finds the controversial topic on which scientists and engineers are busy at work’.

In addition to its controversial nature, the EME specification also represented an interesting case study due to the range of issues connected with it and the possibilities that this presented for a rich comparative analysis of deliberative quality across a variety of policy areas. Traditionally, most studies which examine the procedural legitimacy of deliberative venues have tended to do so in a comparative way, comparing, for example, the differences in deliberative quality online and offline or variations in levels of procedural legitimacy between two or more institutional settings.

Since this research focused on a single case study, analysis of procedural legitimacy across separate deliberative venues was not possible. However, by studying a case study which impinged upon a wide range of policy issues, it was still possible to develop comparative insights, since the deliberative quality and procedural legitimacy of the process could be compared across policy areas. By examining the EME controversy, therefore, it was possible to not only assess the procedural legitimacy of the W3C in general but also to understand how and for what reasons the deliberative quality of discussions concerning EME varied between different policy issues. Such insights would ultimately provide a far more detailed and nuanced understanding of the relative strengths and weaknesses of the W3C process than might otherwise have been possible.

Having described the reasoning behind the selection of the W3C and the EME specification as the object of this study, I shall now proceed to describe the methodological approach used to assess the procedural legitimacy of the W3C, including methods of data collection and analysis.

processes of technological development at their most turbulent, it is possible to reveal something about the underlying dynamics of their creation as well as their connection to wider social issues (Venturini, 2010).

Methodology

When attempting to assess the procedural legitimacy of a deliberative forum, the first question which must be addressed is where the deliberations and decision-making take place. In the case of the W3C, deliberations concerning the development of standards have historically been conducted within a range of working group mailing lists within which participants have the opportunity to voice their opinions, suggest edits to technical specifications and raise or rebut arguments. In addition to their role as deliberative fora, mailing lists are also commonly used for many of the more formal aspects of the standards development process, including calls for consensus (Cfc), declarations of formal objections and the announcement of working group decisions (W3C, 2017d). As such, they provide the perfect source of data for the analysis of the W3C process, allowing the researcher not only to assess the discursive quality of deliberations but also understand the effectiveness of these discussions within the context of the W3C's development process itself.

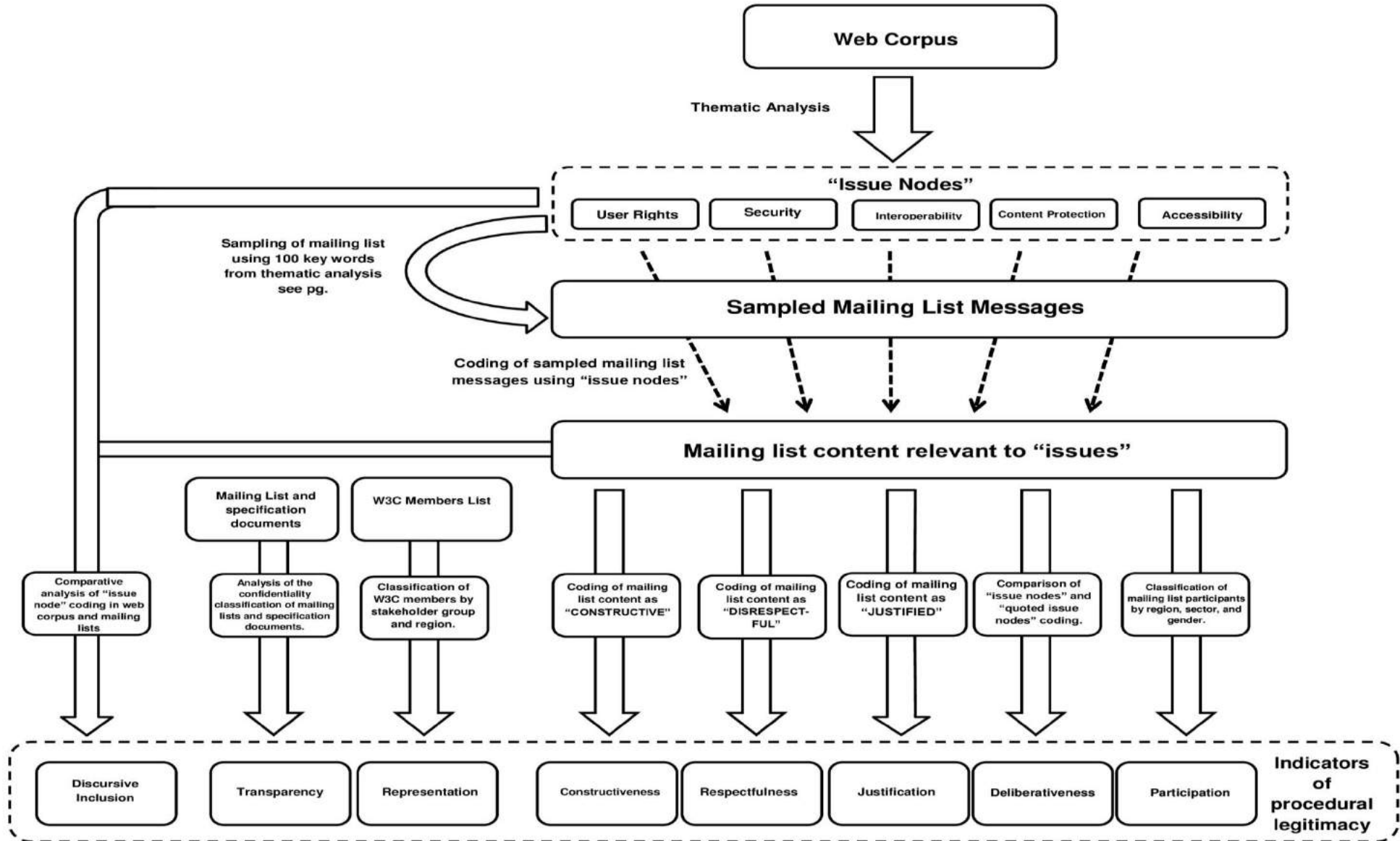
Given their centrality to the standards development process, the W3C mailing lists formed the primary dataset to which the analytical framework described in the previous chapter was applied. However, as discussed above, the controversy surrounding EME was not confined to the 'empowered spaces' of the W3C's working groups, but also manifest itself in a wide range of 'public spaces' both online and offline (Friess & Eilders, 2015; Mansbridge et al., 2012). Although the majority of these venues were not deliberative in nature – and so are not susceptible to analysis using the analytical framework developed in chapter 3 – they did nevertheless offer a rich source of supplementary data which helped to contextualise the controversy and inform the analysis of the primary mailing list data set could be developed.

As such, for the purposes of the research, analysis of the EME controversy was divided into two distinct parts. In the first stage, a preliminary thematic analysis of web sources

related to the EME controversy including blogs, articles and press releases was conducted. This allowed the researcher to identify policy areas relevant to the EME specification and informed the sampling of the mailing list messages. It also provided a necessary point of comparison for the assessment of procedural indicators such as discursive inclusion (see below). In the second stage, messages from various W3C mailing lists and other relevant data⁵ were subjected to content analysis using a coding scheme designed to test the quality of the deliberations in relation to the indicators included in the analytical framework. The results were then analysed to assess the overall procedural legitimacy of the W3C process and highlight any variations in deliberative quality between the policy areas studied.

⁵ The majority of indicators included in the analytical framework were assessed using data collected from the W3C mailing lists. However, to assess the indicators 'representation' and 'transparency' it was necessary to use data from other sources. As will be explained below, 'representation' was assessed using data from the W3Cs members lists, while 'transparency' was assessed in relation to the confidentiality classifications of documents and mailing lists related to the development of EME.

Figure 4.1: Summary of the methodology



Web Corpus – Data Collection

The W3C's decision to publish the Encrypted Media Extension specification as a First Public Working Draft (FPWD) in early 2013 caused a flurry of outrage and critical commentary online⁶. Although the size and publicity of the controversy cannot be compared to that of other well-known socio-technical controversies, such as the debates around net neutrality or the revelations about NSA spying programmes (Ball, Borger & Greenwald, 2013), the sheer volume of blog-posts, podcasts, and web articles produced in relation to the specification's development nonetheless meant that a more manageable dataset needed to be sampled. To do so, this study developed an innovative approach to data collection and sampling which leveraged the power of network analysis and web crawling technologies to identify web sources which were most relevant to the development of the controversy.

In recent years, the growing recognition of the importance of the web as a vitally important source of data for social science research has led to the development of an increasingly expansive range of methods and tools to collect and analyse digital media (Rogers, 2013). Among some of the most frequently used of these tools are 'web crawlers' – applications which use hyperlinks to automatically and systematically discover, map and index websites. By utilising the indexing functions of web crawlers, researchers can not only build large web corpora of digital content, but, when used in conjunction with network analysis software, also develop useful insights into the relationships between the sources collected, including for example, the centrality or visibility of given sources or actors within the network (Jasani & Kumbharana, 2014; Rogers, 2010).

⁶ Almost all commentary on the EME specification was mediated through digital media, including blog posts, podcast, and articles on technology news websites. A few notable exceptions included, public protests outside the W3C's Advisory Committee Meeting at MIT in 2016 (Higgins, 2016) and a panel discussion at the European Parliament hosted by Amelia Andersdotter in 2013 (Andersdotter, 2013a).

Historically, most web crawlers have been relatively unsophisticated requiring data to be collated in a highly automated manner without much user control. These features have often meant that web crawlers have been difficult to use for social scientists who, for methodological reasons, often require greater levels of accuracy and control over the way in which their datasets are compiled (Jasani & Kumbharana, 2014; Rogers, 2010). More recently, however, advances in programming have led to the creation of a number of more sophisticated web crawling applications⁷, including most usefully for the purposes of this project, the web indexing and curation tool, Hyphe⁸, developed by researchers at the MediaLabs project in Paris. In contrast to some other web crawling tools, Hyphe has been designed specifically with social scientists in mind, offering several features including the ability to define the granularity of web entities, set the depth of crawls and filter irrelevant sources, which together provide users with greater control over the compilation of datasets (Jacomy et al., 2016).

In order to build a web corpus relevant to the EME controversy using Hyphe, the hyperlinks of a selected sample of around fifty web sources were collected and imported into the application, where they were then defined as “web entities” – web pages or domains whose content is crawled in order to generate a larger corpus⁹. This initial core corpus of sources was sampled on a purposive basis from a variety of different websites and included sources such as blog posts, web articles and campaign materials, all identified by the researcher as in some way relevant to the EME controversy (Jacomy et al., 2016).

⁷ A few other notable web crawlers that have been used for social science research include; Issue Crawler (Rogers, 2010), SocSciBot (Thelwall, 2009) and Voston (Ackland et al., 2006). These crawlers are comparable to Hyphe in terms of their purpose and usability, however none of them provide the types of corpus curation features offered by Hyphe, thus making them unsuitable for this research project.

⁸ Hyphe’s demo and source code are available online at: <http://hyphe.medialab.sciences-po.fr> .

⁹ Unlike some other web crawlers, Hyphe uses a memory structure which allows researchers to dynamically define the granularity of their “web entities”, from the domain level down to the level of individual webpages. Since, this project was primarily interested in building a corpus of sources strictly relevant to the EME controversy, web entities were classified as individual web pages.

Once imported into Hyphe, these web entities were then crawled to a page depth of zero – meaning that only the hyperlinks contained within the page content of the defined web entities themselves would be harvested in order to generate a larger sample of sources. While selecting a low crawl depth helped to limit the overall size of the corpus and prevent the kinds of “snowballing effects” that have previously been characteristic of many automated web crawling methods, the number of “discovered” web entities still numbered in the thousands and included a large number of sources irrelevant to the EME controversy. As such, following the initial crawl, it was necessary for discovered web entities to be manually “curated”, a process which involved the inclusion of web pages relevant to the controversy and the exclusion of those deemed to be irrelevant¹⁰.

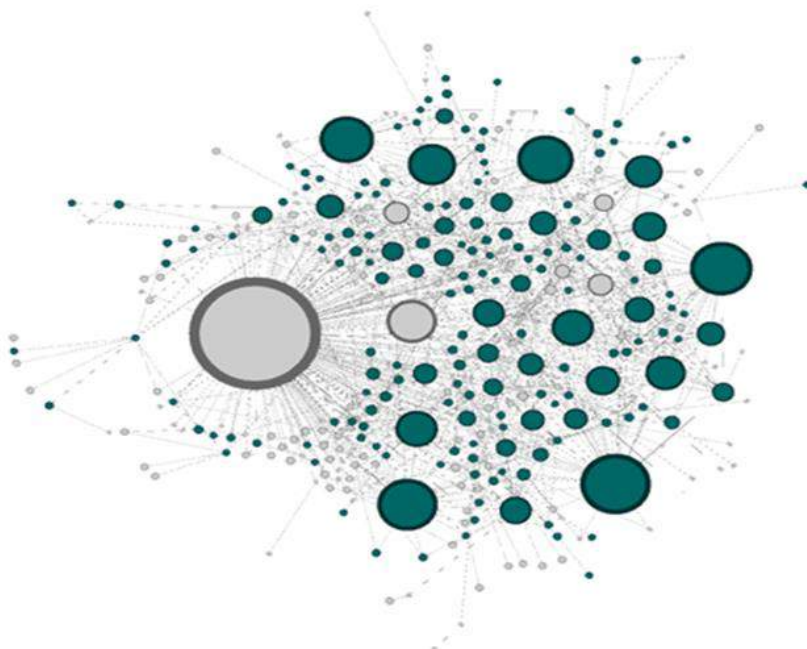
Once this curation process had been completed, the new larger corpus was then crawled and curated for a second time. This process was then repeated until it was determined that the web corpus was of sufficient size and scope to provide a representative sample of all ‘generic’ web content pertaining to the EME controversy. Adopting this step-by-step expansion method of corpus building, allowed the researcher to maintain control over the content of the web corpus, ensuring that the sample was large enough to provide comprehensive coverage of the controversy, whilst also avoiding the kinds of “snowballing effects” and “topic drift” that have previously been associated with some web crawling techniques (Jacomy et al., 2016).

Once the process of building the web corpus was complete, the next step was to analyse the network in order to select from among the several hundred web pages and articles a sample of the most important and influential web sources. Online, it is often observed that hyperlinks function in much the same way as citations within academic publishing

¹⁰ Given the automated nature of web crawling techniques, uncurated web corpora will quite often include large number of irrelevant entities. Most commonly these include generic webpages from so-called ‘hyper-connected’ websites, such popular social media platforms (Rogers, 2010). If set to crawl to a depth of 2 or 3 without curation the EME web corpus would have been larger by many orders of magnitude but would also have been comprised mostly of webpages irrelevant to the EME controversy.

(Berners-Lee & Cailliau, 1990). That is, by including a hyperlink within the body of an article or web page, the author of that piece is implicitly suggesting that the source to which they are referring contains information that is relevant to the topic being discussed or provides evidence in support of the arguments being made. Following this logic, the number of hyperlinks within the web corpus which reference a given web source - or its “indegree” in the parlance of graph theory - can be used as a proxy for assessing the relative prominence or influence of that web source within the web corpus as a whole, or what is sometimes referred to as its ‘network centrality’ (Rogers, 2010)¹¹.

Figure 4.2: A visualisation of the sampled web corpus¹²



In order to calculate the “indegree” of the web sources within the web corpus, metadata generated by the web crawling process was exported from Hyphe into Gephi – a software program used for visualising and analysing network data. Using Gephi, it was

¹¹ This approach is similar in nature to the method of citation analysis used in bibliometrics (Coughlin, Campbell, & Jansen, 2016)

¹² Figure 4.2 shows a visualisation of the web corpus generated using Hyphe and Gipe. In the visualisation sampled web sources are highlighted blue. Sources with a large ‘indegree’ are represented by the larger node in the network. The largest node was the Encrypted Media Extension specification document which was linked to by most sources in the network (W3C, 2016b). Given its purely technical nature this source was excluded from the sample.

possible to represent the web corpus as a network; with sources or web pages represented by individual 'nodes' and hyperlinks represented by the 'edges' which link the nodes together (see figure 4.2). By using the network data to calculate the number of edges directed into each node, it was thus possible to discover the "indegree" of each web source and therefore its relative importance and influence within the web corpus. By excluding web sources with an indegree of 2 or lower - e.g. those web pages which had been linked to less than three times by other web sources within the corpus, the overall size of the sample was reduced from several hundred to just over two hundred. Following this process, the remaining sources were then sampled and on a purposive basis; selecting those of greatest relevance to the controversy and the research questions. In total 205 web sources were selected for analysis.

Web Corpus - Data Analysis

After generating a manageable sample, the web sources were then imported into the Nvivo data analysis software. A thematic analysis of each web source was then conducted in order to identify topics and policy issues relevant to the EME specification (Clarke & Braun, 2014)¹³. As a result of this process, five distinct policy areas were identified as being affected by the development of the EME standard, namely "Security", "Interoperability", "Accessibility", "User Rights" and "Content Protection"¹⁴.

As mentioned above, the intention of this preliminary analysis was not – as some recent deliberative democratic scholars have suggested - to assess discursive quality of deliberations across multiple deliberative venues (Bächtiger et al., 2007; Curato, 2015), but rather more modestly, to enable the researcher to establish a contextual understanding of the controversy and to lay the foundations for the primary analysis of the mailing lists. Specifically, this preliminary stage of the research was intended to allow the

¹³ This process was highly reflexive, with coding categories undergoing several stages of revision and refinement before the final list was selected (Clarke & Braun, 2014).

¹⁴ The relevance of each of these policy areas to the EME controversy will be discussed in detail in chapter six.

researcher to do three things, which would later be crucial for the primary analysis. Firstly, as described above, the analysis of the web corpus allowed the researcher to identify the key policy issues related the development EME. This helped to guide the development of the coding categories which would later be used as part of the primary analysis of the mailing lists (see below). Secondly, the coding of the web corpus allowed the researcher to generate a list of keywords and phrases which were relevant to the controversy and which could then be used to sample the mailing list messages (see below). Finally, by analysing web content related to the controversy the researcher was also able to establish a baseline of “discursive intensity” for each of the policy issues identified. This would later be used as a basis for assessing the discursive inclusion of the W3C process (see below). Having described how data for the preliminary stage of the research was collected and analysed, I will now proceed to discuss how data for the primary analysis of the W3C mailing lists was collected and sampled. Following this, I will then describe how content analysis was used to assess the quality of the W3C process in relation to each of the normative criteria of procedural legitimacy outlined in the analytical framework.

Mailing List – Data Collection

Although the W3C provides a range of opportunities for its members to participate and collaborate in its process, including, for example, annual face-to-face (f2f) advisory committee meetings and teleconferences, currently the vast majority of technical standards work takes place on the W3C’s working group mailing lists (W3C, 2017d)¹⁵. These lists not only provide a useful means of gathering opinions on proposals but, as mentioned above, also play host to many of the more formal aspects of standardisation including ‘Calls for Consensus’. As such, when identifying potential sources of data with which to study the legitimacy of the W3C standards development process, the mailing lists represented an obvious choice.

¹⁵ The W3C maintains a comprehensive archive of mailing lists messages on its website available at <https://lists.w3.org/>.

In addition to their centrality to the W3C's process, the mailing lists also had a number of other attributes which made them particularly useful as a source of data. Firstly, although access to a small number of mailing lists is restricted to W3C staff or members, the majority of mailing lists are publicly available and can be easily accessed via a portal on the W3C's website making them a readily available and reliable source of data.

Secondly, the particular structure of the mailing lists made online discussions easy to follow and so relatively straightforward to analyse from a deliberative perspective. Within each of the W3C's mailing lists, messages are arranged into 'threads' – a series of messages pertaining to a specific topic or question. When contributing to the mailing lists, individuals must either respond directly to messages within an existing thread or start a new thread with a different subject line. This arrangement gives each of the mailing lists a tree-like structure, with all contributions neatly arranged into chains of messages and responses around a given topic. As a result, the mailing lists offered an ideal source of data with which to examine the quality of deliberations within the W3C, since the researcher could easily follow the flow of discussions on specific topics as they grew and evolved throughout the process.

In attempting to generate a sample of messages for the analysis, the first task was to identify those mailing lists which were relevant to the development of the specification. Hundreds of W3C mailing lists currently exist, each with their own discrete area of work or technical objectives¹⁶. Some such as *public-html* are used to discuss technical issues pertaining to specific standards, while others such as *www-tag* are used to discuss broader questions pertaining to policy or governance. Similarly, while some mailing lists are associated with specific proposals and so expected to produce discrete technical outputs, others are intended to function more as general fora to canvas members opinions and develop 'rough consensus' on matters of interest to the community.

¹⁶ Asynchronous mailing list systems enable users from many different time zones to contribute and collaborate without the need to coordinate their schedules. Their use is common practice within most informal standards communities (Jakobs et al., 2001).

As an 'extension' of the HTML5 standard, content relevant to EME could be found within most of the HTML working group's major technical mailing lists (public-hme-editors, public-html, public-html-admin, public-html-comments, and public-html-media). In addition to these mailing lists, data was also collected from the W3C's Technical Architecture Group mailing list (www-tag) - which provided technical feedback and comments on the specification - and from the restricted media community group mailing list (public-restrictedmedia) - which was established during the controversy to serve as a forum for discussions concerning alternative content protection solutions.

Once the relevant mailing lists had been identified, the question then became which threads within those mailing lists to sample. One option, used previously in empirical studies of mailing list archives, was to use a python script such as Big Bang¹⁷ to automatically extract from the archives all messages containing certain keywords in their subject line. Such an automated approach would allow data to be collected quickly and efficiently. Unfortunately, W3C policy prohibits subject tagging on its mailing lists, meaning that content relevant to the EME controversy would not necessarily contain any reference to the specification within its subject line. As a result, sampling the mailing lists purely on the basis of the subject would likely be neither accurate nor comprehensive.

Given these challenges, the decision was taken to adopt a more precise, albeit far more laborious approach to data collection, whereby selected mailing lists were individually browsed and relevant messages manually captured and imported into the Nvivo data analysis software using the programme's 'Ncapture' content logging feature (Bazeley & Jackson, 2013). Once imported into Nvivo, messages were then sorted and arranged into their respective threads ready for analysis. In total, 2939 messages across 235 threads were collected.

¹⁷ Big Bang Python Script available at <https://github.com/dataactive/bigbang>.

Given the exceptionally large number of messages collected from the mailing list, in order to generate a dataset that was both manageable and relevant to the research questions, it was necessary for the collated messages to be sampled. In order to do so, a statistical analysis of word frequencies within the sampled web corpus sources was conducted, from which a set of 100 key terms relevant to the controversy was generated (see Annex A). Following this, a content analysis of the mailing list messages was carried out to establish the rate of occurrence of these key terms in each of the message threads. Threads were then ordered on this basis, before being sampled using a purposive approach to ensure the inclusion of messages from the entire duration of the controversy. No specific target sample size was set prior to the analysis. Instead, message threads were analysed until it was determined that coding saturation had been reached. In total 868 messages across, 66 threads were analysed as part of the research.

Having described how data from the mailing lists was collected and sampled, I will now proceed to discuss how this data was analysed in order to assess the quality of the W3C process in relation to the indicators of procedural legitimacy described in the previous chapter. I will begin by justifying the use of content analysis as the primary research method. In doing so, I will respond to some common critiques of this method and explain its utility for addressing the research questions. Following this, I will discuss each of the chosen indicators of procedural legitimacy, highlighting debates within the literature and explaining how content analysis was used to operationalise each of them for the purposes of this study.

Mailing Lists - Data analysis

The empirical turn in deliberative theory, described in the previous chapter, led not only to a transformation in our theoretical understanding of discursive forms of governance but also to a rapid proliferation of methodological tools and frameworks designed to measure the deliberative capacity of technocratic transnational institutions.

While all empirical studies of deliberative governance are united by a desire to operationalise its normative criteria, the precise methods adopted by researchers to do so can vary dramatically depending on their particular interpretation of deliberative theory, the indicators that they choose to examine, the object of their study and the questions which their research seeks to address (Bächtiger et al., 2009; De Vries, R. et al., 2011; Kies & Jansen, 2004; Steenbergen et al., 2003; Stie, 2008; Stromer-Galley, 2007).

For scholars who adopt DQI-inspired analytical frameworks similar to the one outlined in the previous chapter, the most common methodological approach has been a form of quasi-quantitative content analysis, which utilises sophisticated and often elaborate coding schemes designed to measure and evaluate the various normative criteria of deliberative theory (Steffek & Hahn, 2010; Steiner, 2004; Stie, 2008; Stromer-Galley, 2007). In their study of British parliamentary debates, for example, Steenbergen et al. (2003) developed a coding scheme consisting of nine separate indicators of deliberative quality including participation, level of justification, and respect towards counter-arguments. Using the scheme, Steenbergen et al. coded the content of hours of parliamentary speeches, before analysing the findings to determine the levels deliberative quality across multiple debates. More recently, similar schemes have been developed to test the deliberative quality of various asynchronous online venues such as social media platforms and online forums, coding text rather than speech acts for markers of deliberative quality (Collins & Nerlich, 2015; Graham, T. & Witschge, 2003; Kies & Jansen, 2004; Mendonça, 2015; Monnoyer-Smith & Wojcik, 2011).

While such methods have proved to be very popular as a means operationalising deliberative theory, quasi-quantitative approaches have nevertheless attracted strong criticism for what many perceive to be their overly mechanical approach to deliberative assessment.

Firstly, whilst many critics acknowledge that the insights produced by quasi-quantitative methods are useful for assessing the quality of individual speech acts, they question the

extent to which an analysis of the micro-interactions of individual participants is capable of adequately capturing the overall quality of deliberations or the legitimacy of a process within its broader institutional context (Dahlberg, 2004; Mendonça, 2015). Specifically, critics note how the discursive quality of a decision-making process cannot be assessed in relation to single messages but instead must be evaluated more holistically, with particular sensitivity given to the ways in which the arguments and preferences of participants shift and evolve over time (Dahlberg, 2004). By focusing their analysis solely at the micro level, critics argue that quantitative researchers risk individualising processes and transforming deliberations into nothing more than an exchange of utterances. (Kadlec, Sprain, & Carcasson, 2012; Mendonça, 2015). As Ricardo Mendonça (2015, p. 98) observed, 'rich deliberative processes can be demolished by coders simply because they view each utterance as being unsophisticated. On the contrary, a weak process can be praised for featuring isolated actors and opinions'.

Secondly, deliberative quality analysis has also been critiqued for its apparent failure to account for the coercive power and framing effects of hegemonic discourses. Specifically, critics argue that by focusing purely on the perfunctory measurement of the discursive quality of contributions rather than the content of the contributions themselves, deliberative scholars risk neglecting the complex ways in which participants construct meaning, and in particular how such constructions may act to frame discussions in a way that can exclude or marginalise counter-discourses or minority voices (Barisione, 2012). In his analysis of debates on obesity in Australia and the UK, for example, Boswell (2014) demonstrates how the valorisation of scientific evidence above all other forms of discourse, served to marginalise lay knowledge and personal expressions of subjective experiences, and in so doing excluded certain stakeholder groups from the debate including most importantly, obese individuals themselves.

For Mauro Barisione (2012) these so-called 'deliberative frames' – defined as 'the context of meaning within which a deliberation is constructed' – inevitably introduce an element of

bias into any deliberation. As such, Barisione argues that the presence of deliberative frames risks limiting both the scope and potential outputs of deliberations. As a result, Barisione argues that such frames pose serious challenges for the procedural legitimacy of deliberative institutions¹⁸.

Given their apparent lack of sensitivity to the ways in which entrenched forms of power can frame deliberations, scholars such as Barisione (2012) and Boswell (2014) argue that quantitative and micro-analytical approaches such as the DQI are ultimately unsuitable for examining procedural legitimacy. Instead, they argue for a more qualitative and interpretative approach to deliberative assessment that focuses on the ways in which discourses are used by participants to construct and frame the meaning, purpose and objectives of the deliberations themselves (Bevir & Ansari, 2012; Kadlec & Friedman, 2007; Kadlec et al., 2012). By studying deliberations using interpretive methods, they argue that researchers will be empowered to better identify and assess the complex ways in which different participants define problems and construct meaning; demonstrating, for example, how certain discourses or forms of rationality come to be privileged over others, and how the discursive parameters of deliberations are constructed and enforced (Barisione, 2010). As a result, researchers argue that interpretive methods can provide greater insights into the quality of deliberations than would be possible using a purely quantitative approach, revealing not only the existence of procedural deficits but also their cause.

While the importance of interpretive analysis to the assessment of procedural legitimacy is recognised, here it is suggested that such interpretive approaches should not be seen as incompatible with DQI-inspired approaches, but rather as already implicit within the methods used by proponents of deliberative quality analysis. Bachtiger et al. (2009) for example, observe how although frameworks influenced by the DQI tend to evaluate and

¹⁸ Barisione (2010, p. 9) notes how the functioning of these forms of subtle exclusion are in many cases 'beyond the cognitive horizon and testifying limits of participants' many of whom he argues are 'incapable of grasping the element of communicative distortion'.

present their results numerically, the actual process by which the data is analysed is often highly qualitative in nature, requiring the researcher to carefully read and interpret arguments and make normative judgements regarding the performance of specific speech acts in relation to the indicators used. Similarly, Steiner et al. (2004, p. 60) observe, how despite claims to the contrary, it is not possible to implement quantitative methods of deliberative assessment in a purely mechanically way since “assessing the quality of discourse requires interpretation. One needs to know the culture of the political institution, the context of the debate, and the nature of the issue under debate, to get a true understanding of how actors in the institution use and interpret language”. Thus as Dahlberg (2004, p. 32) argues, for the purpose of assessing the procedural legitimacy of deliberative decision-making processes ‘neither an approach that relies upon the operationalisation of discrete variables nor one that avoids all specification of critical criteria and indicators is adequate’.

Considering the discussion above, for the purposes of this study, the decision was taken to adopt a quasi-quantitative approach to the data analysis similar in nature to that used by previous DQI-inspired studies of deliberative governance. Using this approach, mailing list messages, as well as other relevant data sources such as membership lists, were closely studied and coded using a coding scheme developed specifically for the purpose of operationalising the indicators of deliberative quality identified in the previous chapter (see table 4.2). Importantly, the process of coding mailing list messages required the researcher to read and interpret the content of each individual message carefully. In doing so, it was possible to leverage the analytical strengths of quantitative analysis while also remaining close enough to the text itself to make interpretive judgements about the strengths and weaknesses of the deliberations. Specifically, this approach allowed the researcher not only to identify the existence of deliberative frames but also understand how participants deployed these as part of the process.

While the choice of content analysis enabled the researcher to draw inspiration from a wide range of previous studies of deliberative governance, the manifold ways in which DQI-style methodologies have previously been applied is a testament to the fact that there is no 'off-the-shelf' method of operationalising deliberative procedural standards. As such, in order to measure the procedural legitimacy of the W3C, it was necessary to consider not only how the normative standards of procedural legitimacy should be conceptualised, e.g. "what does inclusive or deliberative mean in this institutional context", but also *how* the data available could be best used to measure those standards. With this in mind, I will now proceed to discuss how - using the data collected from the web corpus and the mailing lists - each of the indicators of procedural legitimacy described in the previous chapter was assessed in the case of the EME controversy.

Inclusion

Perhaps unsurprisingly given the diversity of ways in which 'inclusion' has been conceptualised within deliberative theory, empirical studies of deliberative democracy have utilised a wide variety of methodological approaches for studying the inclusiveness of deliberative processes, ranging from assessments of the equality of access and the socio-economic representativeness of participants (Albrecht, 2006; Coleman, Hall, & Howell, 2002; Monnoyer-Smith & Wojcik, 2011), to measurements of discursive equality and formal procedural linkages between deliberative sites (Graham, T., 2002; Nanz & Steffek, 2005; Schneider, 1997; Stromer-Galley, 2007). As discussed in the previous chapter, rather than limit the analysis of the inclusivity of the W3C standards process to a single metric, for the purpose of this research, a multi-faceted approach to the evaluation of inclusion was adopted. This combined a descriptive analysis of the W3C's membership (representation), an analysis of the equality of participation within the mailing lists (participation), and an evaluation of the discursive representativeness of the mailing list messages (discursive inclusion).

Representation

Given that the W3C is a membership organisation, the initial and most obvious approach to assessing the inclusivity of the consortium involved analysing the diversity and representativeness of its members. The perceived domination of the W3C by Western (mainly US) and corporate interests has been a common source of criticism (Schoechele, 2003). While a certain degree of commercial bias might be expected given the nature of the consortium's work, in order to be considered legitimate it was nonetheless anticipated that the W3C's membership should include representatives from civil society as well as organisations from non-western countries. In order to assess the representativeness of the W3C, a descriptive analysis of the consortia's membership was conducted. Using information taken from W3C's member profiles and member organisation's websites, organisations listed in the W3C's register of members were categorised by their sector, country and region¹⁹. This data was then analysed to produce an overview of the geographic and sectoral distribution of the W3C's membership.

Participation

In addition to an analysis of the diversity of the W3C's membership, an analysis of the equality and distribution of participation within the mailing list discussions was also conducted. The rationale behind using participation as an indicator of inclusion alongside that of representation derives from the recognition that the mere presence of an organisation or individual within an institution does not necessarily guarantee that they will actively engage in processes of deliberation or decision-making.

Within the literature, analysis of participation has generally involved the use of content analysis to assess the extent to which deliberations are inclusive of a broad range of participants or dominated by a small group of influential actors. Often these studies have also involved an analysis the demographics of participants, seeking, for example, to

¹⁹ The location of the organisation's HQ was used to determine its country of origin.

assess the extent to which participants are representative of the broader community or affected stakeholders (Warren & Pearse, 2008).

In order to assess the equality of participation in the W3C process, the authors of all messages relevant to the EME specification on the W3C mailing lists were recorded. After discounting participants with less than five contributions over the entire duration of the standard's development²⁰; social media profiles, including LinkedIn and GitHub profiles as well as personal websites and blogs were then used to determine, the gender, region and employer of participants. This data was then analysed to provide insight into the demographic representativeness of participants.

Discursive Inclusion

Finally, in addition to the metrics of representation and participation, *discursive inclusion* – was also used as an indicator (Dryzek & Niemeyer, 2008). As discussed in the previous chapter, analysis of the discursive representativeness is a critical aspect of the assessment of the inclusivity of deliberative processes since the mere presence and participation of stakeholder representatives does not necessarily guarantee that the interests and opinions of those groups will be accurately or adequately represented.

To analyse discursive inclusion, it was first necessary to establish a baseline level of discursive intensity within the public space against which the inclusivity of the deliberations within the empowered space of the mailing list could be measured. To do this, a thematic analysis of sampled sources from the web corpus was conducted in order to identify key discourses and issues of concern (see above). The results of this analysis

²⁰ It was noted during the analysis of the mailing lists that a minority of participants only contributed to discussions in order to indicate their preference during 'Calls for Consensus' and other informal 'voting' procedures. These contributions often only consisted of simple expressions of affirmation, such as "+1" to signal their agreement with a proposal or decision. Since the indicator of 'participation' was intended to measure the equality and diversity of those actively engaged in deliberations over EME, the decision was made to exclude participants who contributed less than five messages to the mailing list from the analysis of participation. This helped to ensure that the analysis of participation reflected the diversity of those who made substantive contributions to the debate.

were then used to inform the creation of coding categories for the analysis of the mailing lists. Messages from the mailing list were then coded for the presence of the topics identified during the analysis of the web corpus, after which the relative frequencies of these issues within both datasets were compared.

In order for the process to be considered as discursively inclusive, it was anticipated that all topics present within the web corpus (public space) would also be present within the mailing lists (empowered space). In addition to enabling the researcher to assess the discursive inclusivity of the process as a whole, this analysis would also reveal variations in the levels of discursive inclusivity between different policy areas.

Transparency

The selection of transparency as an indicator of procedural legitimacy was motivated by the growing pressure on standards bodies to be more open in the way that they operate. As discussed in chapter three, transparency in an institutional context can be thought of both in terms of the accessibility of important information as well as the publicity of the deliberations and decision-making processes themselves.

In the context of the W3C, access to information pertaining to specifications as well as the transparency of the working group mailing lists is governed by the consortium's confidentiality policy. This policy specifies three separate levels of confidentiality, Team-only, Member-only and Public. Team-only documents and mailing lists are restricted to W3C staff members, member-only documents and mailing lists are restricted to authorised parties, including the representatives of member organisations and invited experts, while public documents and mailing lists are freely published and accessible to the general public (W3C, 2017d).

Given the W3C's use of the confidentiality policy to manage access to key documents and mailing lists, for the purposes of this research, assessment of the transparency of the W3C process simply involved recording the confidentiality level of mailing lists and key

documents including, meeting minutes, specification drafts and Advisory Committee voting records. Mailing lists and documents classified as “Public” were taken to be publicly accessible whereas those classified as “Team-only” or “Member-only” were considered to be inaccessible to the public. In order to be considered transparent, it was expected that the W3C would classify all documents and mailing lists relevant to the development of the EME specification as “Public”.

Deliberativeness

When considering the various ways in which the criterion of deliberativeness has been operationalised within previous studies of deliberative processes, Trenal’s (2004) analytical distinction between formal and substantive types of interactivity is instructive. Trenal uses the concept of formal interactivity to specify the degree to which messages or contributions within deliberative exchanges are linked to each other. Research projects which examine instances of formal interactivity tend to adopt a quantitative approach to assessing deliberativeness, measuring, for example, the formal linkages between individual contributions (Coleman et al., 2002; Wilhelm, 1999; Winkler, 2003). Schneider (1997, p. 74) for example, measures deliberativeness within online forums by counting the number of ‘replies’, defined as messages which ‘appear in the same thread within seven days of the previous message, or [which] cite message[s] directly by message identification numbers’. Wilhelm (1999) similarly measures the total length of threads within message boards, reasoning that the longer the thread, the more deliberative the discussion is likely to be.

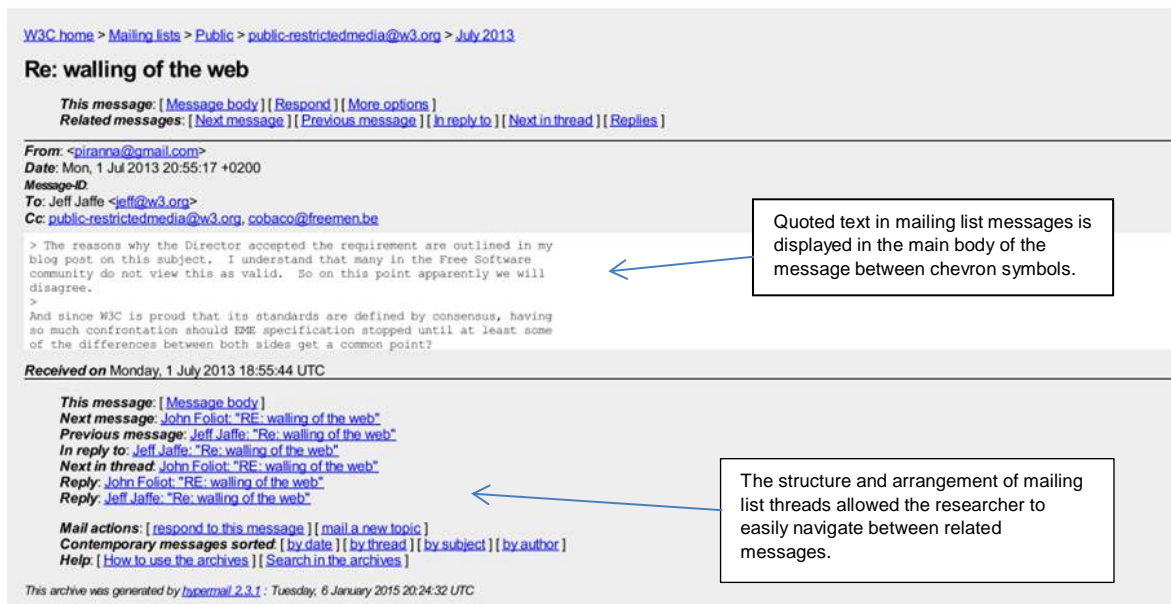
Whilst the analysis of formal linkages between messages, may seem to provide a relatively clear-cut and objective means of assessing the degree to which individuals within a deliberative process interact, critics nonetheless observe how the mere presence of a formal link between two messages does not necessarily indicate that the content of those messages correspond to each other. Kies (2010) for example, notes how online messages which may superficially appear to be linked – as a result of being within the

same thread for example – can often be completely unrelated or off-topic and as such fail to deal substantively with the arguments expressed in the message to which they supposedly refer.

This feature of asynchronous online discussions is noticeable in the W3C mailing lists where single posts often cover several topics only some of which will be engaged with by subsequent replies. As such, while analysis of formal interactivity may provide a rough indication of the overall intensity of a particular discussion, such methods nevertheless fail to capture the interactivity of discussion in a way that deliberative democrats would accept as legitimate (Habermas, 1985).

To address these concerns, other research projects have taken a more qualitative approach to study deliberativeness. In contrast to studies of formal interactivity, these approaches focus not on the linkages between messages, but rather on the content of messages themselves, seeking for example to identify the presence of direct or indirect references to the arguments and reasons expressed in preceding contributions (Monnoyer-Smith & Wojcik, 2012). Jensen (2003a) for example uses qualitative analysis to categorise message into various types, such as “initiate”, “reply” and “monologue”. Graham (2002) similarly, uses the comparable categories of “initial,” “response,” and “irrelevant”, while, Hagemann (2002) examines the text of messages for explicit markers of “agreements” and “disagreements” with previous contributions. By taking this more qualitative and nuanced approach, researchers are not only able to provide a more accurate account of the overall deliberativeness of a given process, but, to the extent that the analysis is conducted at the level of the text itself, also to provide insights into the ways in which specific discourses or arguments are either considered or ignored.

Figure 4.3: Example of mailing list message structure



While, the need to qualitatively analyse messages for evidence of deliberative engagement with the arguments of preceding contributions, may appear to present certain interpretive as well as methodological challenges, the tree-like structure of the W3C mailing lists meant that, in practice, it was relatively straightforward to identify replies to initial thread posts²¹. Furthermore, the widespread use of quoted text within the body of “reply” messages, meant that it was also possible to accurately identify the specific issues and arguments to which the authors were responding²².

This practice of using quoted text within reply messages offered the researcher a simple and effective means of measuring deliberativeness within the W3C mailing lists. To do so, quoted text within the body of reply messages was first coded to one of several issue-specific “QUOTED” nodes. These “QUOTED nodes each corresponded to their own “ISSUE” node - for example, “QUOTED SECURITY” or “QUOTED USER RIGHTS” - and

²¹ Within the W3C mailing list archive replies to each message are listed at the bottom of the page making navigating through the discussions quite straightforward. When importing captured messages into Nvivo, it was necessary to arrange imported messages in a folder structure which replicated the structure and order of messages on the mailing list archive.

²² This use of quoted text is a common feature of many asynchronous mailing lists and part of the informal etiquette of technical standards development. Previous analysis of the W3C mailing lists found examples of quoted text in over 99% of reply messages (Passant et al., 2010).

were used to indicate a direct response to arguments made in relation to those policy issues.

Importantly, if a reply message contained quoted text which included references to several different policy issues, only those sections of quoted text which were directly addressed in the reply would be coded using a “QUOTED” node. For example, if a reply to an initial message which had included text coded to the “SECURITY” and “USER RIGHTS” issue nodes, contained a response to questions raised concerning security but failed to engage with concerns about user rights, then only the quoted text relevant to security would be coded to the “QUOTED-SECURITY” node.

After completing the analysis of the mailing list messages, the degree to which a given topic was genuinely deliberated could then be calculated simply by comparing the number of messages which included text coded to a specific issue node i.e. “SECURITY” with the number of messages which included text coded to that issue’s corresponding “QUOTED” node, i.e. “QUOTED SECURITY”. The larger the proportion of messages coded to the “QUOTED” node as compared to the corresponding “ISSUE” node the more deliberative discussions around that topic were determined to be. By taking this approach, it was not only possible to assess the level of deliberativeness across the process as a whole, but also examine how and why levels of engagement and reciprocity varied between different policy issues.

Justification

Within the existing literature, the criterion of justification offers the greatest level of diversity in terms of its operationalisation, with researchers adopting a broad range of methods to assess the extent to which the arguments presented by participants within deliberative fora are supported by reasons or evidence. Perhaps the most basic and straightforward of these approaches is that adopted by Coleman et al. (2002), which simply involves counting the number of words used in each message. According to Coleman’s methodology, the level of justification can be correlated to the length of

contributions with a high average word count per message taken to indicate high levels of justification and argumentation and a low average word count interpreted to mean a low level of justification (Coleman et al., 2002).

More sophisticated approaches to the assessing justification involve the analysis of the actual content of messages themselves for the presence or absence of reasons or supporting arguments. This can be done for all messages, or as Hagemann (2002) suggests only for those messages which include expressions of opinion or preference.

Within the literature, a wide range of coding schemes have been developed to analyse the presence of justification, each of which varies in its complexity and sophistication. Steenbergen et al. (2003), for example, differentiate between multiple levels of justification, including 'inferior', 'qualified', and 'sophisticated justification'. Kies et al. (2004) by contrast restrict their analysis of justification to a binary distinction between 'justified' and 'unjustified' messages.

Since this thesis is concerned exclusively with the *presence* of justification, it was determined that methods which attempt to make elaborate distinctions between multiple levels or types of justification, such as those used by Steenbergen et al. (2003), would be unnecessarily complex and unlikely to yield any additional analytical insights. As such, the decision was taken to restrict analysis of justification to a simple binary distinction between messages which contained justification and those which did not²³.

From the field of semiotics, it has come to be understood that justification can be thought of as a process through which 'someone tries to convince someone of something by citing evidence and drawing, or suggesting, inferences from this evidence and other beliefs and assumptions' (Sebeok, 1994, pp. 50-51). For this reason, empirical studies of deliberation

²³ In addition to measuring for the presence of justification, some studies also utilise a distinction between the types of justification. Steenbergen et al (2003) for example, distinguishes between appeals to self- interest and group-interest. Jensen (2003a), meanwhile, distinguished between *internal justification*, which relies on subjective knowledge, and *external justification* which is refers to supporting evidence.

generally define justification as the explanation and rationalisation of opinions or claims through the provision of empirical or logical evidence which supports those claims (Stromer-Galley, 2007). Dahlberg (2001, p. 623) for example, suggests that ideal deliberation 'involves engaging in a reciprocal critique of normative positions that are provided with reasons rather than simply asserted'. Similarly, in their study of political conversations on the group discussion site "UK Online", Graham and Witschge (2003) define "rational" messages as those that provide justifications or reasons for "validity claims". For the purpose of this research, justification was taken to mean the provision of any reason or piece of evidence which acted to explain or justify a given preference or opinion. Such justifications could include, references to previous examples or case studies, statistics, personal experiences, anecdotes, or logical deductions.

In order to assess levels of justification across different policy issues, text coded to a particular issue node, which also included justifications were also coded to a "JUSTIFICATION" node. A matrix coding analysis was then conducted to identify overlaps between the coding of each issue node and the "JUSTIFICATION" node. The results of this analysis were then used to determine the proportion of arguments related to each issue which were supported by evidence or reasons. By taking this approach, it was not only possible to examine the level of justification across the process as a whole, but also determine how and why levels of rationality varied between different policy issues.

Since not all mailing list messages contained explicit expressions of opinions or preferences, following Hagemann (2002), it was also decided to limit the analysis of justification to those messages which required justifying. To do this, messages which did not include any expressions of preference or opinion were classified as "N/A" for justification and subsequently excluded from the analysis.

Respect

Respectfulness as a criterion of discursive quality is present within almost all attempts to study deliberative democracy and is a common metric in most empirical studies of online deliberation (Graham, T. & Witschge, 2003; Kies, R, 2010; Spörndli, 2003; Steenbergen et al., 2003). Operationalisations of respect tend to be quite consistent across the literature, with most variations in approach being attributable to differences in the object of study. Studies which examine face-to-face discussions such as parliamentary debates, for example, often include an array of paralinguistic indicators of respect in their coding schemes, such as, the number of times a speaker was interrupted or body language (Steiner, 2004). In the case of asynchronous online deliberations - where an analysis of body language or non-discursive communication is not possible - measurements of respectfulness are typically restricted to the analysis of the content of contributions (Collins & Nerlich, 2015; Graham, T. & Witschge, 2003).

In studies where respect is considered to be a primary indicator of procedural legitimacy, some scholars have devised complex and elaborate coding schemes for assessing the respectfulness of deliberations. Steenbergen et al. (2003) for example, differentiate not only between 'implicit' and 'explicit' expressions of respect but also between "respect for groups," "respect for the demands of others," and "respect for the counterarguments of others".

Given that respectfulness represented only one aspect of the much larger analytical framework used by this study to assess the deliberative quality of the mailing list discussions, such complex operationalisations of respect were deemed to be unnecessarily complex and unlikely to yield any additional analytical insights. As such, for the purposes of this study, analysis of respect was limited to the binary distinction between respectful and disrespectful contributions.

In the context of asynchronous deliberations, 'respect' is usually interpreted in terms of an absence of explicit linguistic markers of disrespect, such as offensive language or abusive

or demeaning personal attacks (Bentivegna, 1998; Coleman et al., 2002; Jankowski & Van Os, 2004; Jensen, 2003b). From a methodological perspective, messages which contain explicit examples of abusive or offensive language are generally quite straightforward to identify as disrespectful, regardless of their deliberative context. However, some scholars observe how in addition to these explicit markers of disrespect, disrespectful messages may also contain other more subtle forms of derogatory language, such as sarcasm or humour, which researchers may or may not interpret as disrespectful. How researchers should code these forms of discourse is less clear since the extent to which these forms of language can be classified as disrespectful will in most cases depend both on the cultural and political norms of the institution as well as the argumentative context in which they are deployed. Thus, when coding for respectfulness, it was necessary not only to examine of the content of mailing list contributions for explicit examples of abusive language but also to be sensitive to the norms and deliberative etiquette of the W3C as well as the context within which less explicit forms of demeaning or argumentative language were used. For the purposes of this study, the W3C's own Code of Ethics and Professional Conduct provided a useful point of reference for determining what should or should not be considered as respectful in the context of the mailing lists (W3C, 2015a).

To assess levels of respectfulness across different policy issues, text coded to a specific issue node, for example, "SECURITY" or "USER RIGHTS", which also contained disrespectful or abusive language was coded to a "DISRESPECT" node. A matrix coding analysis was then conducted to identify overlaps between the coding of each issue node and the "DISRESPECT" node. The results of this analysis were then used to determine the proportion of arguments raised in relation to a specific issue which were made in a disrespectful manner. By taking this approach, it was not only possible to examine levels of respectfulness across the process as a whole but also determine how and why levels of respectfulness varied between different policy issues.

Constructiveness

In previous attempts to study deliberative democracy empirically, the extent to which participants within a deliberative process genuinely attempt to identify areas of agreement or reach a rational consensus has most commonly been assessed by coding messages for 'constructive speech'. Monnoyer-Smith and Wojcik (2012), for example, consider messages as constructive if contributors make new proposals or ask questions. Trenal (2004) similarly measures constructiveness by coding whether individuals attempt to discover common ground or propose solutions to collective problems. Finally, Black et al. (2011) assess not only if participants make recommendations, but also the extent to which these recommendations are given due consideration as part of the decision-making process.

Given that the analytical framework used for this research defined constructiveness in terms of the pursuit of 'meta-consensus' as opposed to a 'simple consensus', constructiveness within mailing list messages was assessed on the basis of participant's efforts to realise one or more of the three aspects of meta-consensus (normative, epistemic, or preference). Such efforts could include, for example, the acceptance by participants of the appropriateness of the values expressed by their opponents (normative); the recognition of the validity of the beliefs of other contributors (epistemic); or the acknowledgement of the feasibility of proposals or compromises presented by other participants (preference). Further to this, messages were also classified as constructiveness if participants demonstrated genuine attempt to better understand the position or arguments of their opponents, for example, by requesting additional information or seeking clarification.

To assess levels of constructiveness across different policy issues, text coded to a specific issue node, for example, "SECURITY" or "USER RIGHTS", which also contained constructive speech was coded to a "CONSTRUCTIVE" node. A matrix coding analysis was then conducted to identify overlaps between the coding of each issue node and the

“CONSTRUCTIVE” node. The results of this analysis were then used to determine the proportion of arguments related a given issue which were expressed constructively. By taking this approach, it was possible not only to determine overall levels of meta-consensus but also describe how and why levels of constructiveness varied between policy areas. Since ‘initial’ thread messages did not refer directly to previous contributions, only ‘reply’ messages were coded for examples of constructiveness.

Conclusion

In this chapter, I have outlined the ways in which the indicators of procedural legitimacy included in the analytical framework were operationalised and assessed in the context of the W3C’s development of the EME specification. The attributes used to classify mailing lists messages (Table 4.1); the coding scheme used to code the content of the mailing lists (Table 4.2); and a summary of the data, methods, and metrics used to assess each indicator (Table 4.3), are all provided in the tables below.

Table 4.1: Summary of classifications and attributes for mailing list messages

Classification	Attribute
Author’s name	e.g. John Smith
Author’s region	Africa, Asia, Europe, North America, South America
Author’s sector	Academic and Research, Government, Non-Profit, Private Sector
Author’s gender	Male, Female
Type of message	Initial, Reply, N/A
Justification?	N/A

Table 4.2: Summary coding scheme for mailing list messages

Code	Description	Example
ACCESSIBILITY	Text related to the topic of accessibility	DRM systems usually prohibit any manipulations with content... thus making a content less accessible by disabled people (Sergey, 2014).
CONTENT PROTECTION	Text related to the topic of content protection	It has been demonstrated over and over again that the bootleggers that DRM is supposed to stop always find ways to circumvent DRM (Russwurm, 2013).
INTEROPERABILITY	Text related to the topic of interoperability	Is the Team taking a position on whether it's appropriate for a W3C specification to rely exclusively on components that cannot be independently interoperably implemented when the specification is used for its intended purpose? (Sivonen, 2016)
SECURITY	Text related to the topic of security	If there is a part of a browser that makes security research difficult and possibly illegal, then that part of the browser is rather self-evidently dangerous to end-users (Halpin, 2016).
USER RIGHTS	Text related to the topic of user rights	Digital Restrictions Management (DRM) restricts the public's freedom, even beyond what overzealous copyright law requires (Russwurm, 2013).
QUOTED ACCESSIBILITY	Quoted text which related to the topic of accessibility.	>>DRM systems usually prohibit any manipulations with content... thus making a content less accessible by disabled people<< (Sergey, 2014)
QUOTED CONTENT PROTECTION	Quoted text which related to the topic of content protection.	It has been demonstrated over and over again that the bootleggers that DRM is supposed to stop always find ways to circumvent DRM (Russwurm, 2013).
QUOTED INTEROPERABILITY	Quoted text which related to the topic of interoperability.	>>Is the Team taking a position on whether it's appropriate for a W3C specification to rely exclusively on components that cannot be independently interoperably implemented when the specification is used for its intended purpose?<< (Sivonen, 2016).
QUOTED USER RIGHTS	Quoted text which related to the topic of user rights.	>>Digital Restrictions Management (DRM) restricts the public's freedom, even beyond what overzealous copyright law requires<< (Russwurm, 2013).
QUOTED SECURITY	Quoted text which related to the topic of security.	>>If there is a part of a browser that makes security research difficult and possibly illegal, then that part of the browser is rather self-evidently dangerous to end-users<< (Halpin, 2016).
JUSTIFIED	Text which contains an explanation or justification for a stated opinion (see pp. 92-97)	After the experience for example with the DRM rootkit malware which was distributed by a once respectable company named Sony there certainly is *no* reason why consumers should trust the producers. (Kuckartz, 2012)
DISRESPECTFUL	Text which contains disrespectful or abusive language (see pp. 97-100)	The old 'it's hard on me too' argument, pathetic. Grow up and take some responsibility (Andrews, 2013a)
CONSTRUCTIVE	Text which contains examples of "constructive speech" (see pp. 100-107)	I would like to hear what you would consider to be a good enough specification for a CDM. Are you are talking about the API interface that the UA exposes for a CDM to plug into? I would be interested in participating in this discussion, but I don't believe that interface should be part of this spec (Steele, 2013)

Table 4.3 Summary of data analysis

Indicator	Source of data	Method	Metric
Representation (Inclusion)	W3C membership list	Classification of W3C members by stakeholder group and region.	Representation of organisations from a diverse range of stakeholder groups and regions.
Participation (Inclusion)	Mailing lists	Classification of mailing list participants by region, sector, and gender.	Participation of male and female individuals from a diverse range of stakeholder groups and regions.
Discursive inclusion (Inclusion)	Mailing lists messages and web corpus	Coding of web corpus sources and mailing list messages using “issue nodes”.	Presence of web corpus issues/discourses within the mailing lists.
Transparency	Mailing lists and specification documents	Analysis of the W3C’s classification of key mailing lists and specification documents, i.e. “Team-only”, “Member-only”, “Public”.	The proportion of mailing lists and documents specified as “Public”.
Deliberativeness	Mailing lists	Coding of mailing list messages using “issue nodes” and “quoted issue nodes”.	The proportion of mailing list content coded to a “issues node” which is also coded to its corresponding “quoted issues node”.
Justification	Mailing lists	Coding of mailing list content as “JUSTIFIED”.	The proportion of mailing list content coded to the “JUSTIFIED” node overall and for each policy issue.
Respect	Mailing lists	Coding of mailing list content as “DISRESPECTFUL”.	The proportion of mailing list content coded to the “DISRESPECTFUL” node overall and for each policy issue.
Constructiveness	Mailing lists	Coding of mailing list content as “CONSTRUCTIVE”.	The proportion of mailing list content coded to the “CONSTRUCTIVE” node overall and for each policy issue.

5: The World Wide Web Consortium (W3C)

Today the World Wide Web Consortium (W3C) is one of the most influential and well-respected institutions of internet governance, responsible for the development of some of the web's most important and widely used technical standards including HTML and CSS. Led by the inventor of the World Wide Web Sir Tim Berners-Lee, the W3C has often been praised for the effectiveness of its consensus-led development process as well as its commitment to the principles of openness and transparency (Doty & Mulligan, 2013; Russell, 2003; Umpathy, 2010). For others, however, the consortium's commercial focus and restrictive membership policies raise questions about its inclusivity as well as the capacity of its process to accommodate broad ranging deliberations on matters of public policy. In recent years, the W3C's development of techno-policy standards has brought these concerns to the fore, generating renewed scrutiny of the consortium's processes and concerns about its procedural legitimacy (Malcolm, 2013, Halpin, 2013).

In this chapter, I provide an overview of the W3C's organisational structure, process and political culture. In doing so, I shall demonstrate how contrasting imaginaries of the web that emerged in the wake of its commercialisation have forced the W3C to mediate between contrasting interpretations of its role as an institution of internet governance. Specifically, I show how competing expectations for the consortium to demonstrate both procedural efficiency (substantive legitimacy) and rigour (procedural legitimacy) have led it to adopt an approach to standards development that combines the ethos of 'rough consensus and running code' with elements of hierarchical control. I conclude by showing how the tensions inherent in this institutional design have been highlighted by the W3C's recent development of techno-policy standards.

The chapter will be divided into three parts. In the first section, I examine the historical and political context of the W3C's creation, highlighting how the commercial pressures created by the web's invention led the consortium's founder Tim Berners-Lee to adopt an organisational structure that combined commitments to grassroots participation and rough

consensus with elements of centralised control. In the second part of the chapter, I provide an overview of consortium's political architecture including a summary of some of the W3C's most important committees and working groups as well as an overview of its standards development process. In the final section of the chapter, I then demonstrate how the consortium's recent development of techno-policy standards has highlighted the underlying tensions inherent within its procedural design as well as ideological conflicts between those who see the W3C as a purely coordinative technical body and those who wish it to play a more active role as an advocate of open web principles and digital rights.

The origins of the W3C

Despite the on-going development of the internet during the 1970s and 1980s, a chronic lack of commercial investment and interest in the technology meant that by the beginning of the 1990s the network largely remained an academic curiosity whose content was often disorganised and confusing to navigate (Gilles & Cailliau, 2000). In 1991, in an attempt to encourage greater adoption of the technology, the National Science Foundation (NSF), which had managed the technical infrastructure of the internet since 1986, lifted all restrictions on commercial activity over the network (Abbate, 2010). Later the same year, CERN researcher Tim Berners-Lee set out to address the problem of the networks navigability by developing a series of protocols which would, for the first time, provide a user-friendly means of browsing hypertext documents online (Berners-Lee, 2000). The World Wide Web as it became known, rendered the internet easily navigable by creating links between 'nodes' on the network and providing a simple user interface through which users could easily access the information they wanted (Curran cited in Tsatsou, p. 206).

Together these two developments instigated a period of rapid commercialisation and expansion which over the next decade would see the internet grow from an initially obscure academic research project into one of the most critical technical and commercial infrastructures of the 21st Century (IWS, 2017). The speed with which the size and scope

of the web grew during the 1990s is perhaps best understood from a statistical perspective. In 1996, for example, the number of websites hosted online was estimated to be around a quarter of a million, by the year 2000 that number had increased nearly seventyfold to over 17 million (IWS, 2017). Likewise, from the mid-1990s onwards the number of individuals connected to the web grew almost exponentially from a mere 16 million in December 1995 to just over 1 billion ten years later (IWS, 2017).

In part, this growth was driven by the investment of private companies, who in contrast to the web's early innovators had come to view the web as a potential marketplace, offering novel ways to reach their customers, develop new services and exploit markets which were previously unknown (Flichy, 2007)¹. As Harry Halpin (2013) observed 'the web stopped being viewed as a playground of hackers and was viewed instead as the latest frontier of capital, an even infinite one. It would be the backbone [upon which] the "knowledge economy"...that promised never-ending returns of productivity, would be built'.

Commercial interest in the web helped to accelerate the pace of innovation. In doing so, however, it also threatened to undermine the openness and universality that had made the early web such a success. Eager to capitalise on the web's nascent commercial potential and in their rush to gain a crucial early market advantage, many corporations had begun to neglect existing standards and add new non-standard features into their products (Halpin, 2013). Although these products were supposedly developed in the interests of consumers, the effect of this technical arms race was, in reality, to severely jeopardise the universality and interoperability of the web, through the production of

¹ Perhaps most notable of the early advocates of a commercial internet, was the then Vice-President and technophile Al Gore, for whom investment in what he famously termed the "Information Superhighway" was necessary to revitalise the US economy. The High Performance Computing Act of 1991 (HPCA), often referred to as the Gore Bill, provided the foundations for much of the investment in the web technologies during the 1990s (Congress, 1991).

incompatible and proprietary digital fiefdoms accessible only through the use of particular software and applications².

Faced with the risk of balkanization, Berners-Lee quickly recognised the need for a new standards body to help coordinate the 'smooth progression of the web through a period of continued technological innovation' and protect his original vision of an open and universal network (Berners-Lee, 2000). In 1994, Berners-Lee founded the World Wide Web Consortium (W3C) and established as its mission statement the determination to 'lead the web to its full potential by developing protocols and guidelines that ensure long-term growth for the web' (W3C, 2017b). Over the next two decades, the organisation would grow to become one of the web's most important and influential governing institutions. More immediately, however, the W3C faced the urgent question of how to balance the technical community's expectation for rigorous and consensus-led procedures with the private sector's demands for speed and efficiency.

The commercialisation of the web

The commercialisation and expansion of the web during the 1990s not only transformed the social and economic importance of the web as a technology but also the political composition and culture of the technical standards communities responsible for its development. During the 1970s and 1980s standards organisations had for the most part been dominated by a relatively small and insular group of academics and engineers, united by cooperative working practices and a shared commitment to architectural principles of openness (Egedyi, 1996; King et al., 1997)³. For this reason, commercial activity on the network was for a long time treated with deep suspicion by standards community veterans, many of whom saw proprietary systems as potentially damaging to the interoperability and openness of the network and counter to the internet's foundational

² This episode in the web's early history is commonly referred to as the 'browser wars' (Halpin, 2013)

³ This notion of a shared set of ideas, assumptions, values and beliefs is what Egedyi (1996) termed the *standardisation ideology*.

principles of open access and permissionless innovation (Bollier, 2008; McChesney, 2013; Naughton, 2010)⁴. As David Bollier (2003, p. 102) put it, ‘they were not sellers and buyers negotiating their distinctively different interests through a market transaction. They were co-users and co-developers carrying on a social conversation... They were, in truth, building a commons: A diverse community dedicated to shared goals and self-governed through a cooperative social ethos and informal decision making forums’.

However as the ideal of a non-commercial web gradually began to erode during the 1990s, standard processes inevitably began to attract the attention of a much wider range of stakeholders, including commercial interest groups eager to discover how they might capitalise on the latest technological innovation. In contrast to their academic counterparts, this new corporate brand of the standards participant had little knowledge of the architectural principles around which the web was designed nor any interest in the practices or social conventions of the technical communities which maintained it. Instead, as King, Grinter, and Pickering (1997) observe, these newcomers were first and foremost interested in representing the commercial interests of their employers, either as incumbents seeking to protect their privileged position or as insurgents hoping to gain a quick market share⁵. As Andrew Russell (2014, p. 257) put it; ‘the days of informal discussion between bearded and sandaled graduate students were in the past; rather a greater proportion of [consortia participants] in the late 90s worked for private companies and wore suits and ties – a vivid reminder that the world of internet standards had changed’.

⁴ Janet Abbate (2000) observes how users of the popular USENET bulletin board system found to be exploiting the network for commercial purposes were often “flamed” by fellow users – a process by which the perpetrators inbox was clogged with messages from fellow users demanding the activity be ceased immediately.

⁵ The reasoning behind this strategy was quite clear, since it is widely accepted that under certain market conditions first-movers can quickly gain significant advantages over their rivals by acquiring control over critical interfaces. By establishing a standard in the market, therefore, firms could quickly attract a network of users large enough to reduce incentives for these users to seek alternative platforms. Once a user network had become established, firms could then leverage considerable revenues from the sale of various operational and support services (Hawkins, 1999).

As a consequence of these changes, during the 1990s standardisation processes began to take on a very different character with discussions increasingly driven by economic imperatives and the pursuit of self-interest rather than shared engineering principles or technical curiosity. As one standards participant at the time reflected, 'the rules had changed substantially. There was big money involved, and everyone knew it... Everybody realised that... how we did the technical solutions, determined market lines, determined economics, determined money in somebody's pocket, so everybody was out for blood. It was no longer this nice old-boys club' (John Day cited in Russell, 2014, pp. 270-271).

For commentators such as David Post (2000), the reorientation of the standards ecosystem towards the fulfilment of private sector objectives was to be welcomed or at least preferred, to what he perceived to be the alternative of state regulation of the web. For those veterans of the standards community who had long been suspicious of proprietary systems, however, the introduction of market competition posed a genuine risk to the interoperability of the network as well as the architectural principles of standards development which had seen the web flourish (Bollier, 2008; McChesney, 2013; Naughton, 2010). As Berners-Lee (2000, p. 197) himself commented, 'the internet ethos in the seventies and eighties was one of sharing for the common good, and it would have been unthinkable for a player to ask for fees just for implementing a standard protocol such as HTTP. Now things are changing'.

Consequently, as the web continued to develop through the 1990s and into the new millennium, the W3C found itself in the increasingly difficult position of mediating between the competing and contradictory visions of the web as an information commons and a marketplace. These conflicting imaginaries of the web not only framed expectations of how the web should develop but as a corollary, also implied starkly different interpretations of the role of the W3C as an institution of internet governance, including the types of legitimacy it should be expected to enact.

For commercial actors, the role of the W3C could be understood, quite straightforwardly, as a facilitator of cooperation between competing stakeholder groups. From this perspective, the primary objectives of the consortium should be limited to tasks which maximised the commercial value and marketability of the web, including the promotion of interoperability and innovation (Flichy, 2007; Post, 2000). This focus on the commercial and technical outcomes of the process meant that the legitimacy of the W3C could be understood primarily in terms of its procedural efficiency and the technical quality of its standards, that is, from a 'substantive' perspective.

In contrast to this view, many veterans of the standards community, as well as early pioneers of the Free and Open Source Software movement (FOSS), interpreted the role of the W3C far more broadly (Davidson & Morris, 2002; Lessig, 1999; Stallman, 2002). For them, the W3C should not only act as a facilitator of private sector cooperation but also as a steward of the open web and as an advocate for the interests and rights of ordinary developers, creators and users. From this perspective what was important, was not only that the W3C promoted innovation and economic growth, but that it did so in a responsible and considered way that was sensitive to the interests of users and that provided ample scope to develop consensus on the principles that would guide the web's future development. In this way, the legitimacy of the W3C was seen as being dependent not only on the quality of its technical outputs but also on its procedural rigour, including the extent to which the views and interests of the broader web community could be represented as part of the process (Morris, 2011).

This more expansive interpretation of the W3C's role was initially reflected in the consortium's design principle a 'Web for All', which indicated its commitment to create a web open and accessible to all users, 'whatever their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability' (W3C, 2013). The view that the W3C should play a proactive role in defence of open web principles was also one to which Berners-Lee (2000, p. 108) himself seemed sympathetic,

suggesting that companies would be 'in for a fight' should they attempt to manipulate or exploit the W3C process in their own interests. Despite the rhetoric, however, the inevitable commercial pressures exerted on the consortium by the web's growth meant that the W3C would need to be pragmatic in the pursuit of its principles.

In what follows I demonstrate how the tensions between these two competing interpretations of the W3C influenced the development of its political architecture and process. Specifically, I will show how growing pressure on standards bodies to streamline their development procedures led the W3C to adopt an organisational structure which combined grassroots participation and consensus-led discussions with elements of hierarchical control. In the final part of the chapter, I will then demonstrate how the tensions inherent within the W3C's institutional structure have been highlighted by its recent development of techno-policy standards.

The W3C's political architecture and process⁶

The challenges that the web's growth would pose to the principled idealism of the standards community were apparent to Berners-Lee and other senior W3C figures from an early stage. Writing in his memoirs Berners-Lee (2000, p. 98) reflects how in the context of the web's commercialisation 'running the consortium would always be a balancing act between taking the time to stay as open as possible and advancing at the speed demanded by the onrush of technology'.

As a veteran of the internet community, Berners-Lee held a deep admiration for the IETF and its 'rough consensus and running code' model of standards development. As such, in founding the W3C, Berners-Lee borrowed heavily from the IETF's organisational structure, adopting processes which emphasised the importance of rigorous testing and

⁶ W3C's activities are administered by MIT's Computer Science and Artificial Intelligence Lab European Research Consortium for Informatics and Mathematics (ERCIM). The consortium also has HQ's in Paris and at Keio University in Japan, as well as several other regional offices around the world (W3C, 2017b).

informal discussions over ponderous voting procedures (Updegrove, 1995a). Like the IETF, Berners-Lee also recognised the importance of consensus-building, defining the consortium's development process as one 'designed to maximise consensus about the content of a technical report, to ensure high technical and editorial quality, and to earn endorsement by W3C and the broader community' (W3C, 2017b). This dual commitment to voluntary consensus and informality was also reflected in Berners-Lee's decision to refer to the consortium's technical outputs as 'recommendations' rather than 'standards'. As Berners-Lee (2000, p. 98) himself explains;

'We wrestled over the terms – whether the consortium should actually set a "standard" or stop just short of that by issuing a formal "recommendation." We chose the latter to indicate that getting "rough consensus and running code" – the Internet maxim for agreeing on a workable program and getting it out there to be tried – was the level at which we would work'.

At the same time that Berners-Lee wished to remain faithful to the 'rough consensus and running code' ethos of standards development, he was also realistic about the pressures that commercialisation would place on the consortium and cautious about the effect that direct grassroots participation could have on its procedural efficiency (Berners-Lee, 2000). Unlike earlier internet standards bodies – which had mostly operated outside the market economy - the W3C was from the beginning expected to be responsive to the demands of commercial vendors. From the early days of commercialisation, other informal standards bodies such as the IETF had been largely ignored by corporations who had grown frustrated at their lack of commercial focus and the 'endless philosophical rat holes down which technical conversations would disappear' (Halpin, 2013)⁷. Thus, in order to

⁷ As Harry Halpin (2013) observed, 'Soon all the major corporations had a website. The corporations sent their representatives to the IETF in an attempt to discover who the power-brokers of the Internet were (and to stack their meetings in order to control voting process) but instead found themselves immersed in obscure technical conversations and mystified by the lack of a formal body of which to seize control. So, instead of taking over the IETF, the corporations began ignoring the IETF'.

avoid irrelevance and prevent corporations from fracturing the universality of the web in pursuit of their own short-term interest, Berners-Lee recognised the need for a more hierarchical and streamlined approach to standardisation that could keep pace with innovation in an ever-changing marketplace.

To achieve this Berners-Lee took the controversial decision to restrict participation at the W3C to organisations who were willing to pay a membership fee. Corporate members would be asked to pay an annual fee of \$50,000, while non-profit, academic, and governmental organisations would be expected to make a contribution of \$5,000 a year⁸. In exchange for their annual fees, members received access to member-only committees and mailing lists as well as one representative on the Advisory Committee – the body responsible for the maturation and approval of proposals and standards (W3C, 2017d).

By adopting a more restrictive approach to participation, Berners-Lee was able to substantially improve the efficiency with which standards could be developed. In doing so, however, the consortium also severely limited its capacity to accommodate the input of the broader community. Indeed, although, some degree of public participation was still possible through the organisation's mailing lists, its political architecture acted to restrict the scope of this participation, leading to an institutional structure and process which, like many other standards consortia, was heavily skewed towards private interests.

Partly to address these concerns and pre-empting the risks to open web principles that such a one-sided process could pose, in founding the W3C Berners-Lee also took the equally controversial decision to offset the influence of commercial interests by concentrating a considerable amount procedural authority in his own position as Director (one which he claims for life). Among the broad-ranging powers held by the director are: 'responsibility for assessing consensus within W3C for architectural choices, publication of technical reports, and new activities'; appointing working group chairs; chartering new

⁸ No category of W3C membership current exists for individuals.

working groups and deciding the outcome of Formal Objections (see below) (W3C, 2017d).

In addition to his considerable procedural authority, Berners-Lee also enjoyed a substantial amount of 'soft power'. As a long-time veteran of the internet standards community and inventor of the World Wide Web, Berners-Lee's knowledge and expertise, were beyond dispute, while his selfless and much-praised decision to release the web freely⁹ helped to reinforce his reputation as someone who could be trusted to act in the long-term interests of the open web.

From a purely pragmatic standpoint, Berners-Lee's role gave him the strategic advantage of being able to foster an institutional environment in which corporate actors could pursue their own interests freely, while at the same time ensuring that the design principles which were vital to the web's long-term success were safeguarded from the excesses of privatisation. As Michael Dertouzos (2000, p. x) put it, Berners-Lee's decision was intended to ensure that 'the web would move forward, flourish, and remain whole, despite the yanks and pulls of all the companies that seemed bent on controlling it'.

Although the procedural importance of the role of Director has often led Berners-Lee to be characterised as the W3C's 'benevolent dictator', in founding the consortium Berners-Lee was careful to create a political structure in which responsibility for the creation and development of standards and web technologies was shared between a wide range of groups and committees run by W3C members and staff. The various roles and responsibilities of these bodies are clearly set out in the W3C 'Process Document', an ever-evolving list of rules and procedures which acts like the consortium's constitution (W3C, 2017d).

⁹ Tim Berners-Lee has in recent years rejected the suggestion that his decision to release the web freely was motivated purely by altruistic or anti-commercial reasons. Instead, he has admitted that the decision had far more to do with ensuring that the web remained flexible and open to decentralised innovation. As Berners-Lee himself explained, 'If I had tried to capitalise on the web initially, it probably would not have taken off... The internet community would have dropped the web like hotcakes' (Berners-Lee quoted in Garfinkel, 1998, p. 42).

By far the largest and most influential stakeholder group within the W3C is the Advisory Committee, which is composed of a single representative from each of the W3C's members. The Advisory Committee has a number of important roles as part of the W3C process, which include reviewing and approving the charters of Working Groups and technical specifications that reach the status of a 'Proposed Recommendations' (see figure 5.1). In addition to its review roles, the Advisory Committee is also responsible for electing members to two other important W3C groups, the Technical Architecture Group (TAG) and the Advisory Board.

TAG deals mainly with questions related to principles of the web's technical architecture. According to the W3C's Process Document, its responsibilities include, documenting and building consensus around principles of web architecture; resolving issues involving general web architecture; and helping coordinate cross-technology architecture developments inside and outside W3C (W3C, 2017d). TAG also hears appeals when member submissions are rejected for technical reasons related to web architecture. The Advisory Board meanwhile, provides on-going guidance on legal issues as well as matters related to management, process, and conflict resolution (W3C 2017d). The Advisory Board also manages the evolution of the W3C's Process Document and hears any appeals which are unrelated to questions of web architecture.

Much of the actual technical work of the W3C is carried out by a wide range of Working Groups, chartered by the Director in order to produce 'deliverables' such as technical reports, software test suites or reviews of the deliverables of other groups. Working Groups are led by Chairs (appointed by the Director) who are responsible for managing the development of technical reports including, soliciting drafts, encouraging participation, setting agendas and judging items as either in or out of scope for the Working Group. In addition to technical Working Groups, the W3C also hosts a wide range of Interest Groups and Community Groups which acts as general fora for members and staff to discuss potential web technologies and policies (W3C, 2017d).

Although W3C members are themselves expected to actively participate in Working Groups, their activities are also supported by a team of permanent W3C staff members who provide 'technical leadership' and administrative support (W3C, 2017d). The W3C is also responsible for communicating with members and the public about the W3C's activities and web technologies. In some cases, these staff members can also occupy important and influential positions such as Working Group Chairs or Domain Leads. The activities of Working Groups can also be supported any number of external experts who are invited by the Chairs to participate in order to provide 'expertise in specific areas' which would not otherwise be available to the Group (W3C, 2017a).

In addition to establishing the roles and responsibilities of the various groups and stakeholders within the W3C, the process document also outlines the W3C's standards development process as well as policies and procedures for the resolution of conflict and appeals.

Although the W3C does occasionally standardise existing technologies, the impetus for much of the W3C's work comes from its members who are expected to work collaboratively to identify potential areas of common interest or requirements. The approval of any new activity can only be provided by the Director who is responsible for chartering new Working Groups and approving the publication of Working Drafts. Once a Working Draft had been approved it then proceeds through various stages maturation along a standards track set out in the Process Document (see figure 5.1). Progression along the standards track is subject to the consensus of the Working Group participants and the approval of the Director. At the final stage of the process, specifications are also subject to review by the Advisory Committee (W3C, 2017d).

Figure: 5.1: Summary of the W3C standards development process (W3C, 2017d)



Status	Description
Working Draft	A Working Draft is a technical report that W3C has published for review by the community, including W3C Members, the public, and other technical organisations.
Candidate Recommendation	A Candidate Recommendation is a technical report which following an extensive review is believed to satisfy the Working Group's technical requirements. Documents are published as Candidate Recommendations in order to gather implementation experience.
Proposed Recommendation	A Proposed Recommendation is a mature technical report which has received the approval of the Director. Proposed Recommendations are submitted to the Advisory Committee for review.
W3C Recommendation	A W3C Recommendation is a technical report or specification which has received the endorsement of W3C members and the Director. The W3C recommends its wide deployment as a standard for the web.

Given that the W3C lacks the kinds of regulatory power needed to enforce its standards, each stage of the development process is designed to maximise consensus¹⁰.

¹⁰ According to the W3C Process Document, 'To promote consensus, the W3C process requires Chairs to ensure that groups consider all legitimate views and objections, and endeavour to resolve them, whether these views and objections are expressed by the active participants of the group or

In cases where a Working Group is unable to reach consensus, the Process Document empowers Working Group Chairs to record a decision. While preference is given to proposals which generate the weakest objections versus proposals that are supported by a large majority but that cause strong objections, the Process Document nonetheless states that a small group of dissenters 'cannot stop a group's work simply by saying that they cannot live with a decision' (W3C, 2017d). As such, when a Chair believes that 'the group has duly considered the legitimate concerns of dissenters as far as is possible and reasonable', the Process Document advises that the group 'should move on' (W3C 2017d).

In circumstances where participants have strong objections to a Working Group decision, they can submit a Formal Objections. In the context of the W3C process, a *Formal Objection* to a group decision is 'one that the reviewer requests that the Director considers as part of evaluating the related decision (e.g., in response to a request to advance a technical report)' (W3C, 2017d). Working Groups must provide a public record of all Formal Objections and are expected to provide substantive responses to the issues raised¹¹. However, the ultimate authority for determining the outcome of Formal Objections resides with the Director, whose decision is final.

Thus, despite certain procedural affinities with the 'rough consensus' ethos of standards development, the W3C can be said to operate much more like a constitutional monarchy than a grassroots democracy, with power over the development of the standards-setting process carefully balanced between the Advisory Committee comprised of W3C members, and the Director. The adoption of this more hierarchical form of governance was not driven by ideology or personal ambition, but – as described above - by a pragmatic recognition of the commercial realities of web development and the need to

by others (e.g., another W3C group, a group in another organisation, or the general public)' (W3C, 2017d).

¹¹ The W3C Process Document states that 'a substantive response is expected to include rationale for decisions (e.g., a technical explanation, a pointer to charter scope, or a pointer to a requirements document)' (W3C, 2017d).

ensure procedural efficiency. Over the past 25 years, the W3C's institutional structure has enabled the consortium to remain responsive to changes in the marketplace but has also been the subject of much controversy and criticism. In what follows I demonstrate how these critiques have led the W3C to implement a number of reforms designed to enhance its transparency and procedural legitimacy.

The Patent Policy controversy and reform

Following its creation in 1994, the W3C's unique melding of idealism and pragmatism, as well as hierarchal and decentralised control, allowed it to successfully navigate the potential pitfalls of the web's commercialisation and establish itself as a well-respected and trusted institution of internet governance. However, as public use of the web continued to increase, the work of the W3C steadily began to encroach on an ever-greater number of policy issues from safeguarding and intellectual property to privacy and freedom of expression. These developments soon sparked calls for greater openness and transparency and raised concerns about the precariousness of entrusting responsibility for the defence of open web principles and interests of users to one man (Davidson & Morris, 2002). Within this context, the centralisation of procedural power and restrictions on participation, which had been so crucial to the consortium's early success, began to be perceived as increasingly problematic. Thus, while the W3C could still rightly be said to exhibit high levels of substantive legitimacy - in the sense that its standards were widely implemented - concerns began to be raised about the consortium's procedural legitimacy (Garfinkel, 1998).

Central to many of the critiques of the W3C during the period, were accusations that the consortium had been captured by corporate elites and, as a result, was neglecting the interests and opinions of the ordinary users and the wider web community¹². As Jeffery

¹² In a W3C press release about its controversial PICS standard for example, the consortium proudly announced that the specification had received input from 23 organisations. Of these,

Zeldman argued, “beholden to its corporate paymasters who alone can afford membership, the W3C seems increasingly detached from ordinary designers and developers” (cited in Malcolm, 2008, p. 67).

Frustrations at the W3C’s exclusivity and perceived neglect of open web principles were most notably brought to a head in 2001 during a highly fractious dispute over a proposed amendment to the W3C’s patent policy, which would, for the first time, allow inclusion of patents in W3C recommendations. Outraged at what they perceived to be betrayal of the web’s founding principles, developers, programmers and free and open source software advocates united in opposition to the planned change. Venting their displeasure on the W3C’s mailing lists, opponents of the proposals threatened to boycott the organisation if the proposal was approved. Faced with an avalanche of criticism and chastened by the ‘potentially fatal consequences of a rank-and-file mutiny’, the W3C eventually backed down and reaffirmed its commitment to royalty-free standards (Russell, 2011, p. 167).

While Berners-Lee and the W3C survived the dispute, for many, the patent policy controversy proved to be a watershed moment for the consortium, which, more aware than ever of the risks of excluding the viewpoints of the broader web community, soon after instigated a series of reforms designed to enhance the transparency and openness of its process (Russell, 2003).

Among the most notable of these changes have been attempts to become more actively inclusive of policy experts and other relevant actors, including lawyers, policy-makers, academics, and civil society groups. This has been achieved partly through a greater use of the consortium’s invited experts policy as well as changes to public access to the W3C’s mailing-lists (Russell, 2003, 2011). Broader engagement with public policy experts has allowed the W3C to draw upon a much wider pool of expertise, helping inform its development of policies on issues such as privacy and freedom of expression. Public

however, all except one – the Centre for Democracy and Technology (CDT) – were ISPs, media or software companies (Malcolm, 2008).

access to mailing lists meanwhile has helped the consortium to enhance its transparency and provided a channel through which a much wider range of individuals, including members of the public can be consulted and express their opinion on the W3C's work.

Alongside changes to policies around inclusion, the W3C has also attempted to take a more explicit approach in its consideration of public policy issues as part of the standards process. Such efforts have included the creation of several domains and Working Groups designed to consider the connections between public policy and the W3C's broader work on standardisation (W3C, 2015c). In the late 1990s, for example, the W3C created the Technology & Society Domain, the first - and to the best of the author's knowledge only - formal structure created by a web standards organisation to explicitly consider matters related to the development of "techno-policy" standards. According to the W3C's website, the mission of the domain is to 'augment existing web infrastructure with building blocks that assist in addressing critical public policy issues affecting the web'. It continues to explain that it is not the expectation of participants to 'solve policy problems entirely', but to design technical tools that 'can lead to policy approaches that are more consistent with the way the web should operate' (W3C, 2015c).

More recently the W3C demonstrated its commitment to due process and openness by joining the Institute for Electrical and Electronics Engineers (IEEE), Internet Society (ISOC), Internet Architecture Board (IAB) and IETF in affirming its commitment to the newly compiled 'OpenStand principles'. The principles – which are described by their authors as a 'Modern Paradigm for Standards', outline a series of guidelines by which organisations are expected to abide in order for their standards to be classified as 'open'. Although many of the principles relate to the effects of the standards produced, including, for example, the requirement that standards 'enable global competition' and 'provide global interoperability', the list also outlines a series of procedural principles, including, the need to ensure due process, broad consensus, transparency, balance, and openness (OpenStand, 2017).

For some, the consortium's proactive efforts to overcome its own procedural deficits and address the public policy implication of its work, signifies a decisive shift towards a more consensus-driven and inclusive approach to standardisation, which is reflective of the 'rough consensus and running code' model pioneered by the IETF (Crocker, 1993). As Russell (2003, p. 23) observed, 'The W3C stands as a model for other industry-driven internet standards consortia as it demonstrates the need for formal mechanisms to facilitate participation from a broader public that might not be at the table in any given standards meeting'.

Others, however, question the extent to which the procedural reforms of the previous decade have had any notable effect on the capacity of the W3C's to effectively deal with the types of complex and divisive issues raised by the development techno-policy standards, noting how the consortium still retains many of the procedural features which raised concerns about its procedural legitimacy in the first place (Weber, 2010; Halpin, 2013; Malcolm, 2013; McChesney, 2013; Schoechle, 2009).

Firstly, despite ongoing efforts include more external experts, critics observe, how the technical objectives of working groups are still largely dictated by a narrow range of corporate members, who are more likely to privilege the pursuit of their own economic self-interest over the common good (Schoechle, 2009). Secondly, while many commentators praise the W3C for its work on issues such as accessibility and security, they nonetheless observe how the consortium's engagement with public policy has tended to be restricted to a relatively small number of issues about which consortium members and participants share a degree of expertise (Halpin, 2013). Finally, critics note how the W3C's on-going need to remain responsive an ever-changing technological marketplace, means that the consortium is unlikely ever to be able to host the kinds of broad-ranging and inclusive deliberations necessary to legitimise its substantive outputs (Weber, 2010).

As such, the challenge facing the W3C remains how to maintain the kinds of hierarchical, top-down leadership and exclusive membership needed for effective and efficient

processes, while at the same time, satisfy the growing demands for greater participation, transparency and due process. Put simply, how to balance *substantive legitimacy* and *procedural legitimacy*.

In the final chapter of this thesis, I examine how these tensions have been brought into sharp focus by the W3C's recent development of the Encrypted Media Extension specification (EME). Through an in-depth analysis of the consortium's standards development process, I will show how participants and members of the consortium continue to contest the W3C's role in relation to public policy. By framing the W3C as a purely technical organisation, I will show how proponents of the specification limited the scope of deliberations and undermined efforts to debate the public policy implications of the standard. As such, I argue that the findings of this research provide evidence to support concerns about W3C's willingness and capacity to consider questions of public policy and raise serious questions about its procedural legitimacy.

6. Case Study: Encrypted Media Extensions

In September 2017, the W3C announced that it had approved the transition of the Encrypted Media Extensions (EME) specification – an extension to the HTML media element which enables web applications to interact with content protection systems to allow playback of encrypted content - to the status of an official W3C recommendation. The decision signalled the end of a long and highly contested standardisation process which had seen staff members resign in protest, an unprecedented number of formal objections, and the legitimacy of the W3C to preside over the development of techno-policy standards called into question.

In this chapter, I will examine in detail the development of the EME specification. In doing so, I will argue that although the W3C exhibited many of the institutional features needed to demonstrate procedural legitimacy - including, a discursively inclusive and transparent development process - concerns nevertheless remain regarding the effects of commercial pressures and the consortium's own techno-scientific bias on its capacity to adequately consider the public policy implications of its work.

I will begin by situating the controversy over the development of EME within the broader context of debates concerning digital copyright and the use of Digital Rights Management technologies (DRM). Following this, I will provide a descriptive overview of EME's development including discussions of some of the key areas of contestation. Next, I will present the findings of the research including analysis of the various indicators of procedural legitimacy included within the analytical framework described in chapter three (Inclusion, Transparency, Constructiveness, Deliberativeness, Respect, and Justification). Finally, I will discuss some of the key findings of the research as well as its broader significance for our understanding of the W3C as an institution of internet governance.

Context

Today we live in an information society. The gradual transition of most developed economies away from the industrialised production of manufactured goods and towards the production and distribution of information has, since the 1970s, positioned knowledge (not labour) as 'the principal force of production' (Lyotard, 1984, p. 5), dislocating its association with material commodities and elevating the status of information as a value in its own right (Castells, 2009; Drucker, 1995; Machlup, 1962). Over the past several decades, this transition to an informational mode of production has, somewhat inevitably, precipitated growing efforts by governments, multinational corporations, and intergovernmental agencies to build the technical infrastructures, legal frameworks and economic tools needed to protect information and support the growth of knowledge production. These efforts have found their most notable expression in the radical expansion of global intellectual property rights regimes designed to maximise the profitability of information through the creation of artificial scarcity (Boyle, 2003; Braithwaite, 2002; Kapczynski, 2008).

At the heart of the information society, however, lies an intriguing paradox. At the same time that the commodification of information has prompted attempts to maximise its value by ensuring its scarcity, ICT technologies - which are themselves products of the information society - continue to undermine information's value by making it increasingly abundant (Gillespie, 2007; Postigo, 2012; Vaidhyanathan, 2003). This paradox was famously captured by American writer Stewart Brand (1985, p. 49) when he observed how;

'on the one hand information wants to be expensive because it is so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So you have these two fighting against each other.'

Thus, whereas historically the task of reproducing information may have been time-consuming and costly, advances in computer processing speeds and digital compression, combined with a corollary decrease in data storage costs has increasingly enabled anyone with access to a computer to quickly reproduce digital content without quality loss and at zero marginal cost¹. Furthermore, whereas the scope of intellectual property rights infringement may have previously been limited by the logistical constraints of material reproduction and real-world distribution, the growth of the internet has meant that, today, files can not only be easily replicated but also distributed across the world instantly using P2P file sharing websites, such as the ever-resilient “the Pirate Bay”. Thus, despite the rapid expansion of intellectual property regimes globally, in context of the growth of the web, control over the distribution and reproduction of digital content has been gradually eroded, challenging accepted norms around ownership and undermining the profitability of those industries whose business models are predicated upon scarcity (Berry, 2008; David, 2010; Vaidhyathan, 2003).

Faced with these challenges, many of the digital content industries – including the digital publishing, motion picture, and music industries - have over the past two decades deployed a range of strategies to combat copyright infringement and protect their profitability. Among these strategies have been, the development of new economic models such as digital music sales and video streaming services, anti-piracy media campaigns designed to portray online file-sharers as criminals (David, 2010; Patry, 2009)², and extensive governmental lobbying efforts intended to advance far-reaching

¹ Before the digitalisation of media, copies made using analogue systems suffered from what is known as ‘generation loss’ - a gradual loss of quality after each subsequent copy (Lessig, 2008).

² In 2002, long-time president of the Motion Picture Association of America (MPAA) Jack Valenti, declared that the industry was fighting its own ‘terrorist war against piracy’, a comment which was typical of a much broader media and public relations campaign fought by the content industries throughout the 1990s and 2000s which successfully promoted the notion of copyright as ‘property’ and all who make unlicensed use of copyrighted material are ‘pirates’ (Patry, 2009, pp. xxi-xxii). This discourse resonated with lawmakers and played an important role in easing the way to a general acceptance of the case for stronger digital copyright law, including the DMCA (Congress, 1998).

extensions to copyright law in legislation including the Digital Millennium Copyright Act (DMCA) in the US and the EU's Copyright Directive (Congress, 1998; Parliament, 2001).

In conjunction with these economic, social, and legal strategies, the content industries have also sought to counter the challenges posed by new technologies through the development of their own technical solutions. Foremost amongst such efforts has been the creation and deployment of various forms of digital rights management technologies (DRM), which use encryption to protect content from unauthorised access by enforcing certain restrictions on the functionality of digital content. Such restrictions may include, preventing users from copying and editing files or restrictions on the types of software or hardware that can be used to access the content (Gillespie, 2007).

For many in the content industries, DRM represents a critical tool in the fight against copyright infringement and digital piracy. Specifically, proponents argue that the technology is essential in order to give creators control over the reproduction and distribution of their works. Without such protections, proponents argue, creators would lack the incentives to create and distribute new content, leading the internet to become simply 'a collection of empty pipes' (Litman, 2001, p. 93).

In contrast to the content industries' interpretation of the internet as a risk which needs neutralising, the growth of the web has also given rise to a broad range of social, political and creative movements which view the web's radical connectivity not as an existential threat to the creative economy but rather as an opportunity to transition to a new networked, cooperative and participatory mode of cultural production. Inspired by the successes of the Free and Open Source Software movement (FOSS), as well as of cooperative enterprises such as Wikipedia and the rise of participatory forms of culture, what is sometimes referred to collectively as the 'free culture' movement³, interprets the

³ Within the literature dozens of different terms have been used to refer to the numerous disparate but interconnected political, social and cultural movements, which here I have chosen to refer to as the 'free culture movement'. Other widely used terms include, the access to knowledge movement

web not as a marketplace facilitating the exchange of commercial goods and service but instead as an information commons. As a result, free culture advocates reject the prevailing neoclassical economic discourses presented by lobbyists in favour of stronger copyright law and the use of DRM online, highlighting how the rapid rise in the use, power and accessibility of ICT has radically transformed the way in which we not only consume but also produce culture online. In doing so, they seek to challenge long-held assumptions about authorship and ownership and promote new economic models predicated not on the scarcity and control of information but rather its distribution and abundance (Bauwens, 2005; Benkler, 2006; Jenkins et al., 2009; Lessig, 2008; Woodmansee & Jaszi, 1994)⁴.

Quite apart from their general suspicion of the underlying economic arguments and discourses which emphasise the need for DRM, digital rights campaigners have also criticised what they perceive to be the technology's collateral effects on a wide range of internet policy issues including, security, user rights, accessibility and interoperability.

In relation to security, critics such as Von Lohmann (2010) note how the technical need for DRM systems to be opaque to end-users presents a variety of security risks since such 'black-boxes' often contain security flaws which are invisible to users but which could be exploited by hackers to compromise and take control of devices. By leveraging the DRM's

(A2K) (Kapczynski, 2008), remix culture (Lessig, 2008), hacker culture (Von Busch & Palmås, 2006), the copyleft movement (Berry, 2008), the public domain movement (Boyle, 2003), and the P2P movement (Bauwens, 2005).

⁴ While it is important to try to contextualise the EME controversy within the broader debates on digital copyright and the use of DRM, it is beyond the scope of this thesis to examine the nuances of these debates or the competing imaginaries of the internet as a public space which emerged from them. For more on these debates see: Berry, D. M. (2008). *Copy, rip, burn: The politics of copyleft and open source*: Pluto Press; Bollier, D., & Watts, T. (2002). *Saving the information commons: A new public interest agenda in digital media*. Washington, DC: *New America Foundation and Public Knowledge*, 26-32; Boyle, J. (2003). The second enclosure movement and the construction of the public domain. *Law and contemporary problems*, 66(1/2), 33-74; Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century*: MIT Press; Kapczynski, A. (2008). The access to knowledge mobilisation and the new politics of intellectual property; Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*: Penguin; Ostrom, E., & Hess, C. (2007). *Understanding knowledge as a commons: From theory to practice*: MIT Press; Stallman, R. (2002). *Free software, free society: Selected essays of Richard M. Stallman*: Lulu. com.

capacity to disguise its operation from the user, malicious software can compromise computers or other devices without the intrusion being detected. In a famous example of DRM being exploited in this way, rootkit copy protection, automatically and covertly installed onto user's computers by Sony BMG CDs, was found to include several security vulnerabilities that were subsequently exploited by hackers. In addition, commentators note how these security risks are further compounded by the so-called anti-circumvention provisions of the Digital Millennium Copyright Act (DMCA) and its international equivalents, which make it illegal to circumvent or disable DRM technologies even for otherwise lawful reasons such as security research or auditing (Congress, 1998). Although intended to provide legal recourse for copyright holders against hackers who maliciously break DRM encryption, scholars observe how over the past two decades these provisions have made DRM technologies effectively un-auditable, as security researchers are prevented from carrying out their work for fear of being prosecuted (Herman, 2011; Von Lohmann, 2010).

In addition to the security problems associated with content protection, critics also highlight how DRM technologies have caused compatibility and interoperability problems which have contributed to the creation of an increasingly fragmented media landscape in which certain categories of content are only accessible using specific combinations of hardware and software. In particular, critics note how most forms of DRM do not merely prevent customers from copying digital files but also specify how files can be used including, for example, which types of software or media players they can be played on (Von Lohmann, 2010). For example, a DRM encrypted song purchased on Apple's iTunes would not be playable on non-Apple devices, whereas songs purchased in a Windows media format may not be compatible with Apple's iPod. In addition to causing confusion and frustration among consumers, critics note how the compatibility issues caused by DRM also have the potential to lock consumers into certain platforms, limiting consumer choice and jeopardising competition between platforms and devices (Kasprowski, 2010;

Shernaman, 2011). In a related concern, Kramer (2007) observes how the restrictions that DRM technologies impose on the ways in which content can be consumed can often create compatibility problems with assistive accessibility tools such as screen readers and subtitling, thereby threatening the ability of disabled users to access or consume digital content.

Finally, and perhaps most controversially, critics note how the blanket nature of the restrictions imposed on users by DRM technologies effectively curtail the rights granted to consumers by the category of copyright limitations known as fair use. Fair Use rights - which pertain to a broad range of acceptable uses of content beyond private personal use, including for example, the creation or editing of copies for educational or creative purposes – are designed to balance the interests of copyright holders with the public interest in the wider distribution and use of creative works by allowing for certain limited uses of copyrighted material without the need to acquire permission from the copyright holder (Gillespie, 2007; Postigo, 2012). By introducing technological barriers, which prevent users from exercising these privileges, critics argue that DRM effectively enforces a maximalist interpretation of copyright law, beyond that of even the most stringent intellectual property regime (Lessig, 2004). As a result, commentators such as Lessig (2008) argue that DRM negatively affects not only the ability of consumers to use and share digital content in a way that is consistent with norms of non-digital consumption but also on the flourishing of nascent forms of participatory digital culture which rely heavily on the rights granted under the fair use doctrine.

In response to mounting consumer pressure, during the late 2000s a growing number of online platforms, including iTunes, began to scrap the default use of DRM in its products, leading some commentators to optimistically declare the 'death of DRM' (Arrington, 2007). As will be demonstrated, however, the rise of video streaming services together with the decline of previous methods of implementing content protection online, have over the past

several years lead to growing demands from copyright holders and content producers for the creation of a standardised means of applying DRM protection to online video content.

Encrypted Media Extension

From viral sensations on YouTube to satirical remix videos and glitch art⁵, online video content has over the past decade become an increasingly important aspect of modern life and an essential part of our digital culture. It is currently estimated that online video streaming accounts for approximately 73% of all consumer internet traffic, and with the recent exponential growth of popular streaming services such as Netflix and Hulu expected to continue into the near future, this number is only likely to grow (Cisco, 2012)⁶.

Until quite recently, access to video content online has been largely reliant upon the use of third-party plugins such as Adobe Flash or Microsoft Silverlight which extend browser functionality to enable users to stream encrypted video content. Although widely used, these plugins have nevertheless been notoriously prone to security flaws and problems with interoperability. To address these problems and to provide a more effective and elegant solution to the challenge of providing video content online, in 2007 the W3C announced the addition of a video element to its flagship HTML standard, which would allow users to embed video content directly within the browser without the need for plugins.

In response to the initial development and subsequent growth of HTML5 video as the preferred option for streaming video online, many browsers and web applications began to curtail their support for plugin applications. While the transition to HTML5 and the demise of the much-derided plugin architecture were widely celebrated, unlike conventional plugins, HTML5 video did not support the playback of encrypted content using DRM. For the millions of users who wished to share their video content freely via video hosting sites

⁵ Glitch art involves the use of digital errors caused by the corruption or manipulation of digital data for aesthetic purposes.

⁶ Current projections estimate that by 2021 video traffic will account for roughly 82% of total traffic (Cisco, 2012).

such as YouTube or Vimeo, this oversight was not an issue. For paid-to-view streaming services such as Netflix or Hulu, however, the lack of support for DRM in HTML5 video posed a significant problem, since their license agreements with content providers almost always required the use of robust content protection in their web applications to prevent piracy.

In early 2011, amidst growing concern about HTML5's lack of support for the playback of 'protected content', the W3C's Web and TV Interest Group⁷ convened the Media Pipeline Task Force (MPTF)⁸ to "discuss requirements placed on the HTML5 video, audio and media interfaces by media formats that are used for Web and TV applications". Later that year, the Task Force under the leadership of CableLabs' Clarke Stevens published a list of design goals and requirements that content protection should support for Web and TV applications. In the document, the authors highlighted concerns that while the majority of internet traffic is now video streaming, 'there are currently no standards or common conventions in HTML to provide the level of content protection required by some content owners. As a result, content owners must support multiple, non-interoperable private content protection solutions' (W3C, 2012)⁹. Echoing the content industries' warnings about the risk of "empty pipes" over a decade earlier, the authors argued that without such a standard rights owners would be 'less likely to produce the high-value content that drives the commercial video businesses' or make their content available online (W3C, 2012).

In early 2012, following the publication of the MPTF's requirements document, Adrian Bateman (Microsoft), David Dorwin (Google) and Mark Watson (Netflix) submitted a

⁷ Launched in February 2011, the Web and TV Interest Group was created to 'provide a forum for Web and TV technical discussions, to review existing work, as well as the relationship between services on the Web and TV services, and to identify requirements and potential solutions to ensure that the Web will function well with TV' (W3C, 2011). The groups charter can be found at: <http://www.w3.org/2012/11/webTVIGcharter.html>.

⁸ More information about the Media Pipeline Tasks Force including its charter and a list of its members can be found at: https://www.w3.org/2011/webtv/wiki/MPTF/MPTF_Charter.

⁹ The document affirmed that the MPTF did not seek to take a 'position on the specifics of the legal agreements between users, content owners and content distribution service providers', but instead 'identify requirements for the technical tools to enable the terms of those agreements' (W3C, 2012).

proposal for an extension to the HTML media element (a subset of the HTML standard) to the public-html mailing list for comments (Bateman, 2012). The proposal entitled “Encrypted Media Extensions”, claimed to provide a standardised means of communication between web applications and digital rights management agent software to enable the use of HTML5 video to playback encrypted audio and video content¹⁰. The authors argued that the specification would replace the need for users to download and install “plug-ins” with a standard Application Programming Interface (API) that would automatically discover, select and interact with an unspecified third-party content protection systems - or what the specification termed a “content decryption module” (CDM) – which could then be used to decrypt the content (W3C, 2016b).

While proponents of the specification argued that the proposal was necessary to protect online video content from copyright infringement and promote the growth of the nascent streaming services industry, for opponents, the proposal represented a cynical attempt by the content industries and their commercial partners to protect their own business interests at the expense of users. Echoing many of the arguments that had been voiced in opposition to DRM during the 1990s and 2000s, critics raised concerns about the negative impact that the implementation of EME could have for accessibility, interoperability, user rights and security (Schoen, 2013). Others meanwhile, questioned the need for EME at all, noting its historical failure to prevent piracy and citing a general trend towards alternative business models which were not reliant on content encryption (Andersdotter, 2013a). Furthermore, by standardising the capability to implement DRM natively digital rights activists claimed that content protection would become normalised and so, in time, lead to attempts to extend content encryption to other parts of the web (O’Brien, 2013).

¹⁰ In the proposal, the authors sought to make clear that the specification itself would not create or impose a specific DRM system – or Content Decryption Module (CDM) as they referred to it - rather, it simply defined “a common API that may be used to discover, select and interact with such systems”. As such, while the proposal would create a standardised means of communication between the web browser and content protection system, the actual decryption of the content would not be handled by EME but instead by a third-party DRM system (CDM), which the specification left unspecified (W3C, 2016b).

Whatever the specifics of their concerns, all critics of the proposal were united in the view that EME was fundamentally counter to the founding principles of the W3C and as such should form no part of the open web platform.

In what follows, I discuss some of the key concerns raised by critics of the proposal. These issues were all identified as a result of the thematic analysis of web sources relevant to the EME controversy which was conducted as part of the preliminary stage of this research. Following a discussion of these issues, I will then proceed to provide a brief overview of EME's development from a working draft to a W3C recommendation before presenting the findings of the primary analysis of the W3C mailing lists.

Accessibility

The notion that the web should be universal, and thus accessible to everyone regardless of 'their hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability', is seen by many – including inventor of the web and Director of the W3C Tim Berners-Lee himself¹¹ - to be one of the foundational and unquestionable principles of the open web (W3C, 2017b). As such, the promotion of equal access to web content for users with diverse abilities is today widely interpreted to be an important principle of web standardisation and a key metric against which the technical quality of specifications should be judged. Nowhere is the importance of web accessibility as a principle of web design more evident than at the W3C, where the

¹¹ Tim Berners-Lee's widely cited observation that 'the power of the web is in its universality', is often used by accessibility advocates as an argument from authority in support of their demands for a greater emphasis on the importance of web accessibility (W3C, 2017c).

promotion of web accessibility - particularly through its Web Accessibility Initiative (WAI)¹² constitutes a major component of the consortium's standardisation work (W3C, 2017c)¹³.

Given the importance of accessibility as a key principle of web design and DRM's reputation for poor compatibility with assistive technologies, it is perhaps unsurprising that during EME's early development representatives of several accessibility interest groups expressed serious concerns about the specification's potential effects on accessibility. Among the most notable concerns was the impact that the specification could have on the ability of disabled users to access encrypted content using assistive technologies such as screen-readers and captioning software. As Konstantinov Sergey (2014) observed;

'DRM systems usually prohibit any manipulations with content including displaying third-party subtitles, or (in case of e-books) reading a book using system voice-over engine, thus making content less accessible by disabled people. [EME] is thus totally incompatible with an effort to make Web more accessible'.

While acknowledging concerns regarding the collateral effects of previous DRM technologies, the proponents and authors of the specification sought to reassure critics that during the development of EME, conscious efforts would be made to alleviate or at least minimise these issues. They noted, for example, how the initial proposal for the specification had been developed in line with existing W3C accessibility guidelines¹⁴ and

¹² Much of this work is conducted under the auspices of the W3C's Web Accessibility Initiative, which 'brings together people from industry, disability organisations, government, and research labs from around the world to develop guidelines and resources to help make the web accessible to people with disabilities including auditory, cognitive, neurological, physical, speech, and visual disabilities' (W3C, 2017c).

¹³ The W3C's commitment to accessibility is represented by their stated commitment to a 'Web for All' (W3C, 2017b). On their website, the W3C cites the UN Convention on the Rights of Persons with Disabilities - which recognises access to information and communications technologies, including the web, as a basic human right - as a key motivation for their work on accessibility (W3C, 2017c).

¹⁴ The WIA maintains a comprehensive list of general guidelines and recommendations regarding web accessibility (W3C, 2017c) (W3C, 2015b). In addition, in 2015 the W3C also published a

how in accordance with the W3C standards process the specification had been subject to an accessibility review by the Accessible Platform Architectures Working Group (APA WG), which following “repeated analysis and testing [had] shown no barriers to accessing captions, transcripts, or audio description of video” (Foliot, 2013a).

Contrary to critics’ claims that work on any standard designed to implement DRM was inappropriate for the W3C, proponents argued that it was precisely because of the types of accessibility challenges usually associated with DRM that EME’s development within the W3C was so important. By acknowledging rather than ignoring the genuine content protection requirements of copyright holders and providing a collaborative forum within which solutions to those requirements could be pursued in an open and transparent way, supporters argued that far from jeopardising accessibility, the W3C was, in fact, helping to promote it by ensuring that any accessibility issues raised by EME’s development would be identified and formally addressed as part of the process. Such scrutiny, the authors claimed, would have been far less likely had EME been developed outside of the W3C process. As John Foliot (2013a) observed;

“One of the benefits of working on this type of technology within the W3C is [the] invaluable "cross-talk" between SMEs of different backgrounds and expertise. Chasing this work out of the W3C eliminates (or significantly reduces) the ability to have fresh eyes and ears looking at the spec, and poking at it from unusual and different perspectives, such as "accessibility"...Working on this technology inside of the W3C is probably *the best thing* to happen to ensure accessibility issues are addressed’.

comprehensive list of Media Accessibility User Requirements (MAUR), which describes necessary accessibility support for online media, including captions, audio description of video and transcripts.

Content Protection

In his announcement of the initial EME proposal to the HTML working group mailing list in January 2012, Adrian Bateman (2012) noted that ‘many content providers and application developers have said they can't use <audio> and <video> because HTML lacks robust content protection. Without this functionality, they cannot move their apps to the web platform’. Specifically, Bateman observed how the licenses that online streaming services such as Netflix held with copyright owners often required the use of content protection, meaning that the lack of HTML video support for content encryption threatened their ability to provide users with access to ‘premium content’. For Bateman and others, the development of EME was thus necessary not only as a tool to prevent piracy but also as a means of ensuring the growth of a content and media-rich web.

For opponents of EME, however, many of the arguments mobilised by proponents of the specification in support of DRM were based on false premises. In contrast to proponents’ arguments that DRM was effective as a method of content protection, for example, opponents noted how almost every previous version of DRM had quickly been bypassed by hackers and had repeatedly been shown to have little or no effect on rates of digital piracy. As Florian Bosch (2013) put it;

‘It has been demonstrated over and over again that the bootleggers that DRM is supposed to stop always find ways to circumvent DRM... You don't need to out-obfuscate joe-average user. You're trying to out-obfuscate people who can read assembly in hex as well as you may read C++ or Ruby. Trying to outsmart the smarter has traditionally not worked very well... it only takes one single person to be smarter than the entire exposure area of your obfuscation, which by definition cannot be watertight... It's futile’.

In addition, critics also insisted that the claim that content protection was needed in order to ensure the availability of high-quality content online was wildly overstated, highlighting,

in particular, the enormous range of amateur and professional content that was freely available online. As Bart Cornelis (2013b) observed;

'Content needs to be protected' is an unproven assumption, not a known fact. The (open) web has, if anything, disproved that notion: there has never been a period in history where more content was more widely available, and that margin is getting wider every day. Looking at historical evidence the amount of available content seems: - directly related to the easy of (re)production, distribution and access... Given that, why on earth would W3C through EME want to publicly support new technological means for restricting reproduction, distribution and access?'

Finally, critics also sought to reject what they saw as the dubious claim that content protection was the only effective means of ensuring fair compensation for content producers online, highlighting several examples of alternative technologies and business models which were not reliant upon encryption. As Duncan Bayne (2013) argued;

'There are many possible solutions - e.g. micropayment or payment framework integration with media playback - that could address the issue in a way that I'd wholeheartedly endorse as being compatible with Open Web goals. DRM is not one of them. The issue is that 'big media' have not come forward to say "we need a commerce standard that will allow us to monetise content", they've said "we want DRM, and here's how we'd like it implemented'.

Interoperability

In many ways, the pursuit of interoperability can be seen as the *raison d'état* of standards bodies such as the W3C whose mission statement outlines its ambition to 'lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability'(W3C, 2017b). In the context of the development of web technologies, interoperability can, at its most basic, be understood as the goal of

ensuring that digital content is accessible to all users regardless of the specific software or hardware that they use. By ensuring that its standards can demonstrate at least two independent interoperable implementations before progressing along the standards track, the W3C aims to ensure not only that specifications will be widely implemented but also that they avoid the kinds of incompatibilities seen during the 'browser wars' of the early 1990s, when the optimisation of web content for specific browsers threatened to balkanise the web (Berners-Lee, 2000).

According to the authors of EME, it was precisely this desire to maintain a universal web that motivated them to propose the specification's development in the first place. During the 2000s the withdrawal of support for DRM plugins such as Microsoft Silverlight had led content owners to gradually migrate their content from the open web to proprietary native apps which provided built-in content protection. As such, in order to prevent further fragmentation of the web, proponents argued that a common standardised mechanism for implementing DRM in the browser was necessary.

Issues with interoperability had plagued previous DRM plugin ecosystems, but proponents of EME insisted that their solution could be implemented in an interoperable way. Specifically, they argued that, contrary to some of the more hyperbolic claims of their critics, the purpose of EME was not to "standardise DRM for the web" but simply to define a JavaScript API which could be used to *interact* with DRM solutions. In this way, the authors of EME observed how - beyond a basic form of encryption known as ClearKey, which was expected to be implemented as a baseline - the specification document did not define any specific DRM technology. Proponents noted further that, in contrast to existing proprietary systems, this baseline CDM was fully interoperable meaning that content encoded using ClearKey would be playable across all platforms regardless of the users' software or hardware. By leaving the specification of the CDMs to individual implementers, proponents were not only able to argue that the specification was

necessary to avoid platform fragmentation, but also that it represented a substantive improvement on previous architectures, including much higher levels of interoperability.

For opponents, however, claims that EME could be implemented interoperably using ClearKey encryption were at their best naïve and worst deceitful. Specifically, they noted that since the level of protection provided by EME's baseline CDM fell far short of that specified by content owners in their license agreements with publishers, to be implemented in a way that would satisfy content owners - and thus fulfil its intended purpose of providing effective content protection for HTML5 video - EME would require the use of proprietary third-party CDMs. Unlike the baseline CDM defined by the specification document, these would be entirely closed source and as such prevent users from making any changes or auditing the code that was running within their browser.

While necessary to meet the robustness requirements of content owners, critics observed how the closed source nature of these 'approved' CDMs meant that they would be incompatible with FOSS browsers, whose licenses require that all source code be available for inspection. As a consequence, critics claimed that the development of EME would inevitably jeopardise interoperability since the inability of FOSS browsers to implement EME would mean that content encoded with CDMs would not be universally available across all browsers. Thus, for many critics, EME represented not only a betrayal of the FOSS community but also an abandonment of one of the W3C's own design principles. As Bart Cornelis (2013a) observed;

'I think the line can be drawn from W3C principles...Show me a DRM system that "premium" content creators are ready to run... on open source software running on an open source OS. [H]aving yet to see such a thing, I think enabling it on the Web would de-facto make the playing field less open for some hardware and software, failing a primary goal of our mission. The spec explicitly

allows restricting the use of content to specific hardware or software that's the anti-thesis of interoperability'.

Security

As web users have increasingly begun to share more of their personal data online, either through social media platforms or e-commerce sites, the need for standards bodies to consider questions of privacy and security as part of web standardisation has inevitably grown. As a critical aspect of the web's technical infrastructure, standards have, over the past decade, been increasingly viewed as playing an important role in the promotion of a safer and more secure web, with a number of prominent standards – including the W3C's own DoNotTrack and P3P recommendations - being developed explicitly for the purpose of enhancing user control of their privacy and security online (W3C, 2007, 2015d).

Alongside these privacy and security specific web standards, the past decade has also seen the development of a number of standards, which as a consequence of their design, have had unintended negative consequences for online security and privacy. In a recent example, an extension to the HTML5 specification designed to allow site owners to serve low-power versions of web pages to users with little remaining battery life was shown to generate a pseudo-unique identifier which could be used to track users activity online (Hern, 2016).

Perhaps unsurprisingly given the increased prominence and importance of security both as an explicit design goal and as a guiding principle of standards development, the W3C today hosts a large number of working and interest groups dedicated exclusively to the consideration of the privacy and security implications of W3C recommendations. These include, among others, the Privacy Interest Group (PING) the Tracking Protection Working Group (TPWG), and Web Security Interest Group, all of which are coordinated by the W3C's Technology & Society Domain (W3C, 2015c).

Given the awareness and acceptance of the importance of privacy and security issues among the standards community and DRM's chequered history when it comes to security, it was perhaps unsurprising that a proposal to standardise a means of implementing DRM within web browsers attracted criticism from W3C members and participants. Specifically, opponents of the specification noted how in order for EME to be implemented in a way that would satisfy the robustness requirements of content providers, proprietary CDMs whose functionality would be opaque to the user would need to be installed. While this 'black-boxing' of the CDMs source-code was necessary to ensure that the content encryption could not be illegally bypassed or deactivated by users, opponents nonetheless observed how closed source implementations had long been recognised by security experts as potential risks, since they often contained security flaws that were invisible to users but which could be exploited by hackers to compromise and take control of devices¹⁵. As mailing list participant Jesús Leganés-Combarro (2013) noted;

'A closed implementation of WHATEVER can host anything inside it, from user activity loggers to keyloggers, backdoors, trojans... By definition, any box that's closed and you can't inspect, can store the cancer's cure or an activated nuclear bomb ready to explode'.

For opponents, these problems were further compounded by the anti-circumvention provisions of the DMCA and other copyright laws, which make it illegal to circumvent or disable DRM technologies even for otherwise lawful reasons such as security research and auditing. As a form of DRM, critics noted how bypassing CDM protections would invoke these provisions. As such, they warned that the development of EME could lead to a chilling effect on security research as security experts would inevitably avoid auditing

¹⁵ Concerns surrounding the privacy implications of EME were heightened by Edward Snowden's 2013 revelations about the extent of NSA surveillance, which had damaged trust in technology companies whom it was revealed had colluded with government bodies to provide so-called "backdoors in their security systems (Ball, Borger & Greenwald, 2013). Within this context, many participants questioned the extent to which the same companies could be trusted to audit CDM's properly.

CDMs for fear of being sued. As Danny O'Brien (2016) of the EFF observed;

‘the most damaging parts of DRM cannot be fixed through improved technology. DRM's technical flaws have been exacerbated by flawed law... Anti-circumvention statutes in countries across the world compensate for the weaknesses of DRM's protection model with harsh penalties for those who bypass it, even for perfectly reasonable aims... The end result is that DRM is a black box, a legal booby-trap embedded in more and more devices, which security researchers or those seeking to re-implement for the purposes of interoperability, can neither bypass or even fully discuss without legal risk’.

By effectively mandating the use of CDMs, opponents argued that the specification not only directly jeopardised the security of users' browsers but also the capacity of security researchers to carry out their increasingly vital work. As Joichi Ito (2016) put it;

‘By allowing DRM to be included in the standard we 'break' the architecture of the internet by allowing companies to create places to store data and run code on your computer that do you not have access to... We will be left with a broken and fragile architecture, as well as browsers whose internals are off limits to security researchers, who face brutal punishment for trying to determine whether your gateway to the internet is secure enough to rely on.’

User Rights

Unlike the issues of accessibility, interoperability and security, all of which had for some time constituted a significant part of the W3C's work; there was very little precedent for the consideration of questions related to copyright or fair use as part of the consortium's standards process. Nevertheless, given the widely recognised and highly controversial effects of DRM on fair use, consumer rights and participatory culture, the development of the EME specification inevitably attracted the critical attention of a wide range of digital rights activists and free culture advocates. Although many of the concerns

raised by opponents were reflective of those expressed in relation to previous versions of DRM, given that the proposal enabled the encryption of online content, critics argued that the specification would be likely to have a number of additional implications specific to the web. Among the most widely cited of these, were the specifications potential effects on user practices such as 'bandwidth arbitrage'. As Cory Doctorow (2016a) explained;

'In the developing world, use of the web is strongly limited by the high cost of mobile data. What frees them to participate in the web is time- or place-shifting their usage. Throughout the global south, we see a widespread usage pattern of downloading large files while in Wi-Fi range, for later use. This "bandwidth arbitrage" enables the poorest internet users to approximate the kind of access to rich media assets that the rest of us take for granted. A tool to allow for offline storage and playback of EME-locked videos would fall afoul of many countries' equivalents to DMCA 1201'.

Furthermore, whilst proponents of the specification insisted that the development of EME was intended solely for the purpose of encrypting what they described as 'premium' video content, many critics cautioned that the implementation of EME could be the start of a slippery slope that, in time, would lead to restrictions being placed on other categories of content. As Danny O'Brien (2013) warned;

'A web where you cannot cut and paste text; where your browser can't "Save As..." an image; where the "allowed" uses of saved files are monitored beyond the browser; where JavaScript is sealed away in opaque tombs; and maybe even where we can no longer effectively "View Source" on some sites, is a very different web from the one we have today. It's a web where user agents—browsers—must navigate a nest of enforced duties every time they visit a page'.

By working on EME, therefore, critics argued that the W3C was putting the interactive and creative nature of the web at risk, paving the way for a proliferation of DRM technologies that, they argued, would overtime lead not to more web content, but less. As Laurel Russwurm (2013) put it;

‘Strong copyright is bad for independent creators - if DRM can be used to shoehorn copyright maximalism into the very structure of the internet, if DRM becomes both the default and the norm, independent creators will be shut out, and the internet will stop being open and interactive and become the modern incarnation of television’.

In response to arguments regarding the effects of EME on consumer rights, proponents countered by emphasising the rights of producers. In particular, they highlighted the repeated and consistent demands of content producers and copyright holders for the types of content protection that EME was designed to provide, and accused opponents of the specification of cynically attempting to deny content creators of the right to protect their own creations. As John Foliot (2013c) argued;

‘Certain actors appear to be opposed to the work being done to address a business requirement and legitimate use-case, based upon their own personal philosophies with regard to "ownership" and copyright law, and the desire of some content creators to actually profit from the creation of their intellectual property... While my personal perspective tends to be very liberal... I also recognise the rights of creators of "entertainment media" to both profit from their efforts, as well as seek means to protect the marketability of that content’.

In addition, proponents noted that since the application of EME enabled encryption would not be mandatory for sharing online videos, service providers who did not wish to impose restrictions on their content would not be forced to. As such, proponents argued that if EME’s critics objected to the use of content encryption, they would still be free to use

services which did not use DRM. In this way, over time the question of the appropriate balance between user's rights and producer's rights would itself be resolved by the power of the market. As John Foliot (2013b), argued;

'Vote with your feet....don't take a Netflix subscription, don't use a browser that supports EME/DRM/ABC/DoeRayMe. There are choices of open source browsers, so take one, and ship it minus EME support: if that is truly what the market wants, that browser will succeed'.

EME from FPWD to Recommendation

Initially published in early 2012, the EME proposal quickly prompted lengthy and at times heated debate on the several of W3C's technical mailing lists¹⁶, however, it was not until January of the following year when a Call for Consensus (Cfc) for the publication of a reworked version of the proposal as a First Public Working Draft (FPWD) was announced on the *html-admin* mailing list that EME attracted much attention or controversy. Publication as an FPWD would position the proposal on the first step of the standards track to become an official W3C recommendation. As such, it sparked outrage and opposition both inside and outside the W3C. Most notably this included a coalition of civil society organisations, including the Creative Commons, Open Knowledge Foundation, Free Culture Foundation, Open Technology Institute, and several national pirate parties, who submitted a joint letter to the W3C urging the consortium's members not to proceed with the specifications development. In it, they argued that;

'DRM restricts the public's freedom, even beyond what overzealous copyright law requires... ratifying EME would be an abdication of responsibility; it would harm interoperability, enshrine non-free software in W3C standards and

¹⁶ Early discussions of the proposal were contained mainly to a few technical HTML working group mailing lists. Among the fiercest criticism of EME during this period, came from Google employee and WHATWG HTML editor Ian Hickson, who, in a much-circulated blog post, described the proposal as "unethical" (Hickson, 2012).

perpetuate oppressive business models. It would fly in the face of the principles that the W3C cites as key to its mission, and it would cause an array of serious problems for the billions of people who use the web' (cited in Rogoff, 2012).

Acknowledging the negative feedback to the proposal both inside and outside of the W3C, the Chairs of the HTML Working Group initially judged that the Cfc did not pass. In making their decision, however, the Chairs also determined that contrary to those who felt that EME was not the type of work that belonged at the W3C, the specification was in their view 'within scope' for the W3C and the HTML Working Group. As such, they requested that in future participants refrain from making principle-based arguments and that all further discussions of the proposal be restricted to technical matters concerning the specification document. At the same time, the Chairs also clarified that since the W3C processes requirements for the progression of a proposal to FPWD were quite low, consensus would not be a prerequisite for the approval of the proposal once the decision was reviewed¹⁷. As such, following a brief period of deliberation during which the authors of the specification sought further technical feedback, in early May 2013 the Chairs announced that having reviewed the efforts of authors to address technical bugs raised against the proposal, they had decided to approve the publication of the EME proposal as an FPWD.

In response to the Chairs' decision to declare EME as in-scope and subsequently approve the specification's publication as an FPWD, criticism of the proposal both inside and outside the W3C escalated. Within the mailing lists, Andreas Kuckartz registered a Formal Objection¹⁸ to the Chairs' decision, citing what he believed to be the proposal's

¹⁷ The current W3C process sets a relatively low bar for the publication of FPWDs. According to the W3C process document, 'consensus is not a prerequisite for approval to publish; the Working Group MAY request publication of a Working Draft even if it is unstable and does not meet all Working Group requirements' (W3C, 2017d).

¹⁸ Within the context of the W3C process, a Formal Objection to a group decision is 'one that the reviewer requests that the Director consider as part of evaluating the related decision, for example

incompatibility with the principles of the open web. Outside the W3C, the Free Software Foundation (FSF), through its anti-DRM campaign ‘defective by design’, launched a petition to stop the development of EME (see figure 6.1) as well as a social media campaign ‘#cancelnetflix’ which encouraged its supporters to cancel their Netflix subscriptions in protest at the company’s sponsorship of the specification. At a meeting of the European Commission’s European Multi-Stakeholders Platform on ICT Standardisation, Pirate Party MEP Amelia Andersdotter raised concerns about the potential effects of EME on consumer rights. Andersdotter also questioned whether, given the Commission’s declared intention to revisit copyright legislation, it was appropriate for a ‘standards consortium run by private actors to make decisions that could prevent or side-track political decisions’ (Andersdotter, 2013b)¹⁹.

Figure 6.1: Posters produced by the FSF as part of their campaign against EME²⁰



in response to a request to advance a technical report along the standards track’. A record of each Formal Objection is made publicly available on the W3C website. Consensus in the W3C is defined as the absence of Formal Objections, the submission of a Formal Objection thus represents an important intervention since it officially demonstrates dissensus among members.

¹⁹ The European Multi-Stakeholders Platform on ICT Standardisation is an Advisory Expert Group convened to advise the European Commission ‘on all matters related to European ICT Standardisation and its effective implementation’. For more information see: <http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2758>

²⁰ For details of the FSF’s Defective by Design campaign see: <https://www.defectivebydesign.org/>

In the face of mounting criticism of the EME specification and the W3C itself, in October 2013 Director Tim Berners-Lee broke his silence on the topic in order to address the Formal Objection to the proposal, registered three months earlier. While acknowledging the strength of feeling within the community as well as his own misgivings about DRM as a solution to content protection, Berners-Lee nevertheless announced that he had decided to overrule the Formal Objection and reaffirmed his support for the Chairs' previous decision to determine content encryption as "in-scope" and publish the specification as an FPWD. Explaining his reasoning in a blog post on the W3C website, Berners-Lee emphasised the challenges faced by the W3C in trying to balance the competing demands of its stakeholders and argued that;

'We're together in wanting a robust, rich, open web. We want a web open to inventors and tinkerers, to media- makers and cultural explorers. We want a Web which is rich in content but also a two-way, read-write web. We want a web which is universal in that it can contain anything. To be universal, the web has got to be open to many different sorts of businesses and business models... We put the user first, but different users have different preferences... some web users like to watch big-budget movies at home, some web users like to experiment with code. The best solution will be one that satisfies all of them, and we're still looking for that' (Berners-Lee, 2013).

Berners-Lee's decision to support further work on the proposal was received with consternation by opponents to EME, many of whom accused Berners-Lee of compromising his principles in defence of a narrow set of incumbent commercial interests. More importantly, Berners-Lee's decision also represented a significant setback for opponents of the specification, most of whom had considered the potential of a personal intervention from the Director (as had happened previously in case of the patent policy dispute) as the most likely means of preventing further development of the standard.

Figure 6.2: Timeline of EME's development



Several months later, opponents of the specification's development were dealt a further blow when the Mozilla Foundation announced that after careful consideration it had decided to implement EME within its widely used Open Source browser Firefox. As an open-source browser developer and advocate of FOSS more generally, Mozilla had long objected to the development of EME, which it considered to be incompatible with the open web and open source principles. Following the implementation of the specification in other popular browsers including Google's Chrome and Apple's Safari browsers, however, it became increasingly apparent that a failure to implement EME risked preventing Firefox users from accessing encrypted content and thus Firefox's competitiveness in the browser market. As Chief Technology Officer Andreas Gal (2014) explained in a blog post;

'With most competing browsers and the content industry embracing the W3C EME specification... We have come to the point where Mozilla not implementing the W3C EME specification means that Firefox users have to switch to other browsers to watch content restricted by DRM... This makes it difficult for Mozilla to ignore the ongoing changes in the DRM landscape. Firefox should help users get access to the content they want to enjoy, even if Mozilla philosophically opposes the restrictions certain content owners attach to their content'.

In announcing their decision to implement EME, Mozilla revealed that they would be doing so in a way that would minimise the risk to the user by wrapping the CDM in a so-called 'sandbox' which would isolate its functionality from the rest of the browser. Although Mozilla's use of a sandbox implementation helped to allay some fears, particularly around security issues, for others including digital rights activist Cory Doctorow, Mozilla's perceived capitulation to pressure from content producers and its competitors still felt like a betrayal of the open source community. As Doctorow (2014) himself wrote:

'The Mozilla Project has been one of the internet's most hopeful success stories, and the people who do Mozilla's good works have been personal heroes of mine for more than a decade. The decision to produce systems that treat internet users as untrusted adversaries to be controlled by their computers was clearly taken out of a sense of desperation and inevitability....[but] like many of Mozilla's supporters – and like many of the Mozillans I know and respect – I am devastated by this turn of events. The free and open web needs an entity like Mozilla to stand on principle, especially when the commercial internet world so manifestly stands on nothing but profits.'

Mozilla's decision to implement EME within their Firefox browser, together with the expression of support for the specification by Tim Berners-Lee a few months earlier, acted to notably dampen opposition to the proposal as it became increasingly apparent that the proposal's supporters would not be swayed by principled objections alone. Thus, while the technical development of the specification within the W3C's working groups continued, between mid-2014 and early 2016, vocal opposition to the specification largely subsided.

All this changed, however, when in March 2016 the charter for the HTML Media Working Group expired. Under the terms of the W3C process document, working groups need to be chartered in order to carry out technical work and publish specifications. Working group charters specify the scope of a working group's activities as well as the objectives of its technical outputs. Charters are usually granted for a limited period only, following which working groups must seek approval for an extension from the Director. Following two temporary extensions to the working group charter from September to December 2015 and then for a further three months to March 2016, W3C members were due to convene for the W3C's annual F2F Advisory Committee meeting at MIT in Boston. On the agenda for the annual meeting, was the re-chartering of the HTML Media Working Group as well

as the future of the development of the EME specification - including its potential progression to Candidate Recommendation status.

By coincidence, on the same weekend that the AC meeting was due to take place, FSF was also holding its annual FOSS conference – Libreplanet – at MIT. Conscious of the opportunity to influence the re-chartering process by applying external pressure on Berners-Lee and the working group participants, attendees to the Libreplanet conference announced their intentions to hold a demonstration in opposition to EME outside of the W3C offices in MIT. Publicity in the build-up to the protest quickly revitalised the public debate around the development of the specification. Within the HTML Media Working Group itself, opponents of the specification sought to capitalise on the renewed public interest and the uncertainty of the re-chartering process by requesting that a variety of requirements to be attached to the specification prior to its progression to Candidate Recommendation status. Most notably, these included an anti-circumvention covenant proposal from the EFF which would require W3C members to agree not to sue security researchers who circumvented EME enabled encryption for security reasons.

Figure 6.3: Scenes from the demonstration against EME March 2016 (Higgins, 2016)



Despite the demonstrations against the W3C and renewed dissent by working group participants, shortly after the Advisory Committee meeting, the consortium

announced that it would approve a further extension of the HTML Media Working Group charter and that it would progress the EME specification to the status of Candidate Recommendation without inclusion of the EFF's covenant as an exit condition.

The rejection of the EFF's proposal and the progression of the EME proposal along the standards track prompted further outrage from community members many of whom began to express growing frustration at what they perceived to be the W3C's failure to acknowledge or address their concerns. In addition to the outrage of community members outside of the W3C, within the working group the decision to publish EME as a Candidate Recommendation instigated an unprecedented number of Formal Objections, several of which referenced counter-proposals including, the suggestion that EME be disabled on users' devices by default. While some of these proposals received expressions of interest, none managed to achieve consensus.

In January 2017, it was announced that having weighed the opinions of all sides the Director had decided to overrule all Formal Objections to the proposal²¹. Explaining his decision in a blog post, Berners-Lee reiterated his earlier point that DRM was required if the web was to be capable of hosting all forms of content, arguing that;

The web has to be universal, to function at all. It has to be capable of holding crazy ideas of the moment, but also the well-polished ideas of the century. It must be able to handle any language and culture. It must be able to include information of all types, and media of many genres. Included in that universality is that it must be able to support free stuff and for-pay stuff, as they are all part of this world. This means that it is good for the web to be able to include movies, and so for that, it is better for HTML5 to have EME than to not have it' (Berners-Lee, 2017).

²¹ In response to Berners-Lee's decision to approve the progression of the EME specification to a 'Proposed Recommendation', W3C staff member Harry Halpin resigned from his position at the consortium in protest having earlier threatened to do so if the specification was approved.

Following Berners-Lee's decision to overrule the Formal Objections, in March 2017, the EME specification finally progressed to the status of 'Proposed Recommendation'. In doing so, it prompted a final formal review period, during which the views of Advisory Committee members were collated and submitted to the Director, whose responsibility it was to assess whether there was sufficient consensus to publish the specification as an official W3C recommendation. After several months, Berners-Lee's decision to approve the specification was announced on the public-html mailing list in July 2017.

The decision sparked an instant appeal by the EFF, who, having successfully received the support of the 5% of paid members required by the appeals process managed to force an appeal vote on the issue - the first and only time in its history that the W3C had held an official "vote" on a specification. In the vote held in mid-September 2017, 108 members of the Advisory Committee supported the Director's decision to advance EME to W3C Recommendation, while 57 opposed it and 20 abstained.

In total, from the publication of the initial proposal to its approval as a W3C recommendation, the EME development process lasted for nearly six years. For supporters of EME, the length of the process alone demonstrated the seriousness with which they had taken the objections raised and stood as proof of both the W3C's procedural quality and rigour. Following EME's final approval as a recommendation, W3C CEO Jeff Jaffe reflected on the process as a whole, arguing that;

'We have had an incredibly respectful debate... There were hundreds of posts with many points of view professionally stated on all sides of the issue. Each side contributed understanding to the other side. That doesn't mean that people with passionate viewpoints were swayed. But the W3C played its role as the venue for an open debate in the public square... My personal reflection is that we took the appropriate time to have a respectful debate about a

complex set of issues and provide a result that will improve the web for its users' (Jaffe, 2017).

For opponents, however, the experience of EME's development had revealed serious limitations to the W3C process. For some, the perceived failure of the authors to adequately address principled based objections, particularly in relation to questions of user rights, called into question the capacity of the W3C to deal adequately with the social and political implications of its standards. For others, the willingness of Tim Berners-Lee and the working group chairs to repeatedly overrule formal objections and persist with the development of the specification in the face of significant dissent from stakeholders both inside and outside the process, raised concerns about the reliance of the W3C on its corporate membership as well as the appropriateness of a system of decision-making that centralised so much power in the hands of one man.

Having provided an overview of the EME controversy as well as some of the main areas of contestation, in what follows, I present the findings of the empirical analysis of the procedural legitimacy of the W3C's development of the EME specification using the analytical framework outlined in chapter three.

Data Analysis

In order to assess the procedural legitimacy of the W3C in the context of its development of the EME specification, a total of 205 web sources and 867 mailing lists messages from 66 threads across eight mailing lists were analysed.

Below I present the findings of this analysis, beginning with a discussion of the indicators of input legitimacy (inclusion and transparency), followed by an analysis of the indicators of throughput legitimacy (constructiveness, deliberativeness, respect, and justification). In doing so, I argue that despite demonstrating some evidence of input legitimacy, the W3C's development of EME was characterised by a worrying range of procedural deficits.

Specifically, I will show how the presence of hegemonic deliberative frames relating to the nature of the W3C's process as well as its role as an institution of internet governance led to several instances of 'internal exclusion' which severely limited the scope of discussions and undermined attempts by participations reach consensus. The effects of these frames will be shown to have been particularly evident in the context of discussions of content protection and user rights. I conclude by arguing that the findings of this research call into question the procedural legitimacy of the W3C and its capacity to preside over the development of techno-policy standards.

Inclusion

Historically, most critiques of the legitimacy of the W3C have been expressed in terms of a lack of inclusivity, with many commentators raising concerns about the effects of the W3C's membership rules on the ability of civil society groups and other user representatives to participate in the process (Schoechle, 2009).

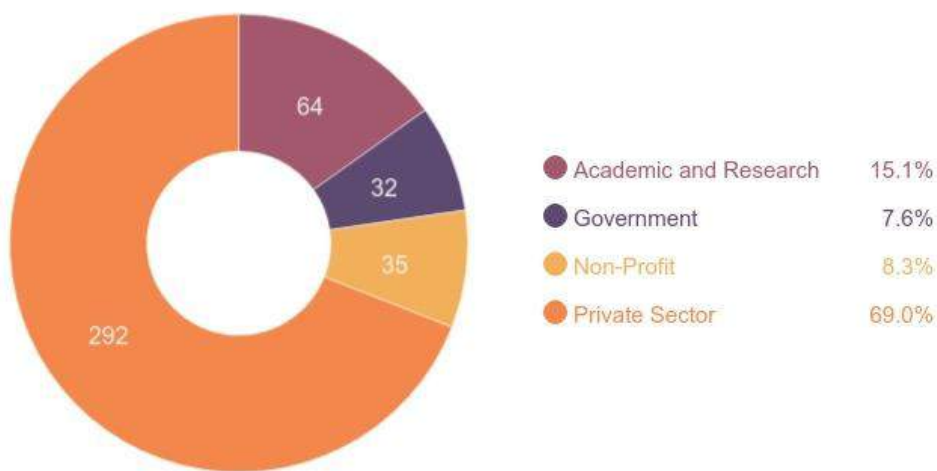
Given the implications of the EME for issues as diverse as user rights, security and accessibility, the development of the specification attracted the interest of a wide range of stakeholders, including consumer advocacy groups, free software activists, browser developers, artists, and content producers. For the W3C to be considered legitimate, it was therefore essential that the views and interests of all these groups were represented either directly or indirectly as part of the process. In order to assess the consortium's inclusivity, this study adopted a multi-faceted methodological approach, examining the representativeness of the W3C's membership, participation in working group discussions, and the 'discursive inclusion' of the mailing lists.

Representation

To assess the representativeness of the consortium, the W3C's members list was analysed and its 423 members (as of December 2016) categorised by their stakeholder group and region.

Perhaps unsurprisingly, given the W3C’s status as an industry consortium, a sectoral analysis of the W3C’s members list revealed that its membership was heavily skewed towards the private sector with nearly three-quarters of members (n=292) representing corporate interests (W3C, 2016a)²². For the most part, these companies included browser developers and software companies. However, notably – given the impact of EME of issues related to copyright – the list of members also included a significant number of representatives from content producers, including, the BBC and the Walt Disney Company, many of whom had been participants in the Web and TV Interest Group which had first published the requirements for the EME specification (W3C, 2011, 2012).

Figure 6.4: W3C Members by stakeholder group, 2016



Most controversially, the W3C’s list of members also included the Motion Picture Association of America (MPAA), which joined the consortium in 2013 at the height of the controversy. For many opponents of EME, the MPAA – who had played a pivotal role in promoting strong intellectual property rights during the so-called ‘copyright wars’ of the

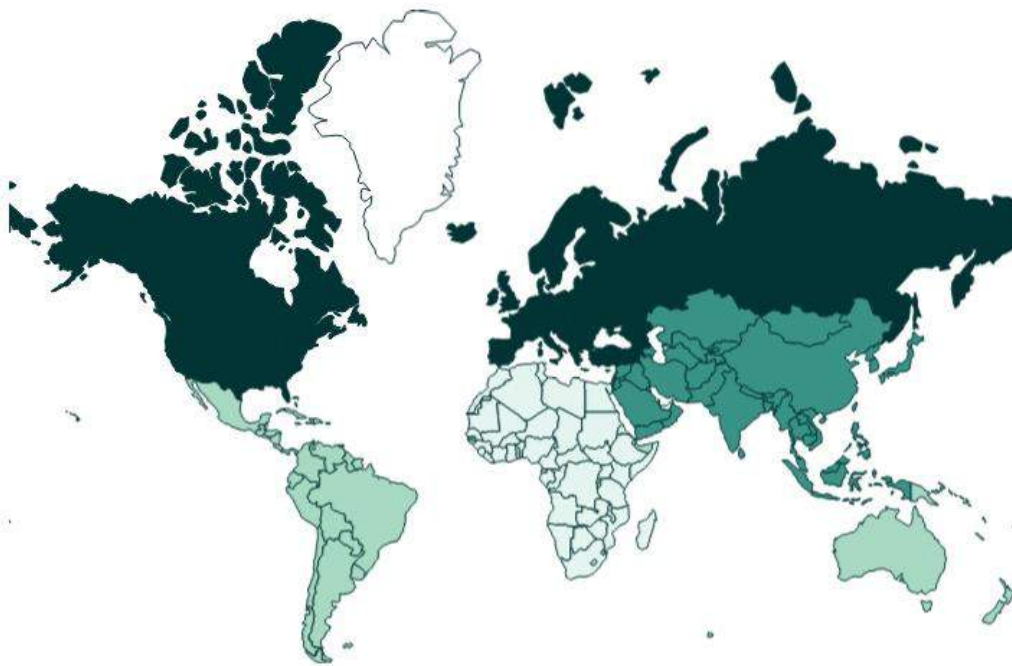
²² Analysis of the W3C member list was conducted in late 2016. At the time of writing, the W3C has a total of 468 members. A full list of members can be found at: <https://www.w3.org/Consortium/Member/List> (W3C, 2016a).

1990s and 2000s – represented the antithesis of everything the W3C stood for (Patry, 2009). As such, their membership drew consternation from opponents of EME and helped to reinforce the perception among the specification’s critics, that the W3C had become captured by corporate interests. As Maneesh Pangasa (2013) put it;

‘Unfortunately, the MPAA's push for DRM in HTML5 is being entertained without asking users what they think. There are 377 organisations in the W3C but over a billion internet users. No one is asking us what we want? This is a betrayal of trust. In politics, those with power get heard and get to influence policy, and everyone else gets screwed. All the stakeholders from Google to Microsoft and Netflix pushing this I say shame on you for not listening to your customers/users’.

While corporate actors represented by far the largest portion of members, the list of W3C members also included representatives from a range of academic and research organisations such as Nanjing University and the Meraka Institute, South Africa (n=64) as well as various governmental bodies and departments, the Indian Government Department of Information Technology (n=32). More importantly from the perspective of this research, the W3C members list also included a small but significant number of members from non-profit and civil society groups (n=35). Among these organisations were a number of groups with direct relevance to the issues raised by the development of EME, including digital rights campaigning groups such as the Electronic Frontier Foundation (EFF) and Centre for Democracy and Technology (CDT), Free and Open Software advocacy organisations such as the Free Software Foundation (FSF), as well as a large number of accessibility groups, such as the Royal National Institute for Blind People, Benetech, and Media Access Australia.

Figure 6.5: W3C member list analysis by region, 2016



Region	Number	%
Africa	5	1.2
Asia	89	21
Australia and New Zealand	12	2.8
Europe	146	34.5
North America	157	37.1
South America	14	3.3
Total	423	100

In terms of the geographic distribution of the W3C’s membership, analysis of the consortium’s members list revealed that the organisation counted among its members, representatives from all regions of the world including, South America (n=14), Africa (n=8)

and Asia (n=89). Among these were also a total of 69 representatives from non-OECD countries, including Morocco, Senegal and Uruguay. However, despite this regional diversity, the analysis also demonstrated that the consortium is still nevertheless predictably dominated by Western stakeholders (n=315) and in particular US organisations, which alone represented approximately 35% (n=148) of the W3C's total membership²³.

Although these findings seem to support the common perception of the W3C as an organisation dominated by corporate and Western interests, the figures are nevertheless not inconsistent with other comparable standards organisations. Updegrave (2008) for example, notes how high levels of commercial interest in standards development, driven by speedy technological obsolescence and fast-moving marketplaces, has previously seen corporate actors represent upwards of 90% of some standards consortia. Studies of other institutions of internet governance including ICANN, meanwhile, reveal that the underrepresentation of stakeholders from the developing world is by no means a problem exclusive to technical standards consortia (Prakash, 2016). Furthermore, while civil society groups continue to represent only a small minority of the W3C's total membership, their presence does nevertheless contradict the view that the consortium's membership requirements represent an unassailable barrier to entry for non-commercial stakeholders.

Despite these caveats, however, the global and long-lasting nature of the consortium work means that such inequities remain unacceptable, and it is clear that much more needs to be done to encourage the participation of non-commercial and non-western groups before the W3C can consider itself to be representative of the whole web community. As such, although the findings do not provide strong evidence to suggest that the W3C membership rules significantly limited access to standardisation in a way that is noticeable

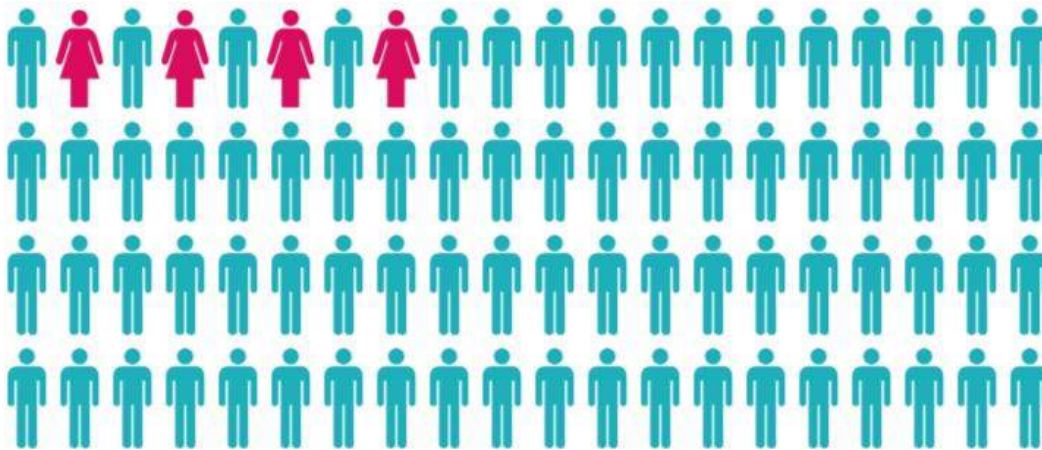
²³ During the controversy the JustNet Coalition accused the W3C of "digital colonialism", claiming that EME excluded those in the Global South who were struggling for access to information at the expense of North American and European Corporations (Bollow, 2017).

inconsistent with other web standards organisations, nor do they suggest that the W3C is sufficiently representative to legitimise its development of techno-policy standards.

Participation

In addition to the analysis of the composition of the W3C's current membership list, the indicator of inclusion was also assessed in relation to participation. In order to assess participation, the authors of the mailing list messages were categorised on the basis of their gender, region and stakeholder group.

Figure 6.6: Mailing list participants by gender

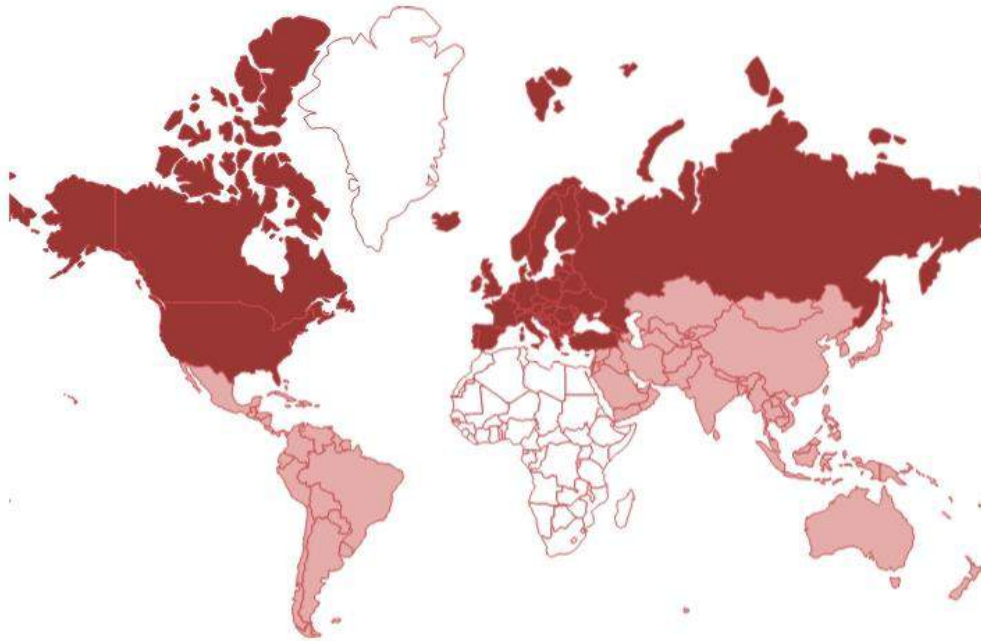


Gender	Number of participants	Number of messages	%
Female	4	35	1.1
Male	76	2989	98.9
Total	80	3024	

Firstly, with respect to gender, analysis of the data revealed that of the 80 participants that posted 5 or more messages on the mailing lists, only 4 were women. In total, these women posted only 35 messages across all mailing lists, a figure which represented a mere 1.1% of the total number of messages posted (n=3024). These

results support the findings of previous studies which demonstrate a significant underrepresentation of women in standards processes as well as the ICT sector more generally (Graham, M., Straumann, & Hogan, 2015).

Figure 6.7: Mailing list participants by region



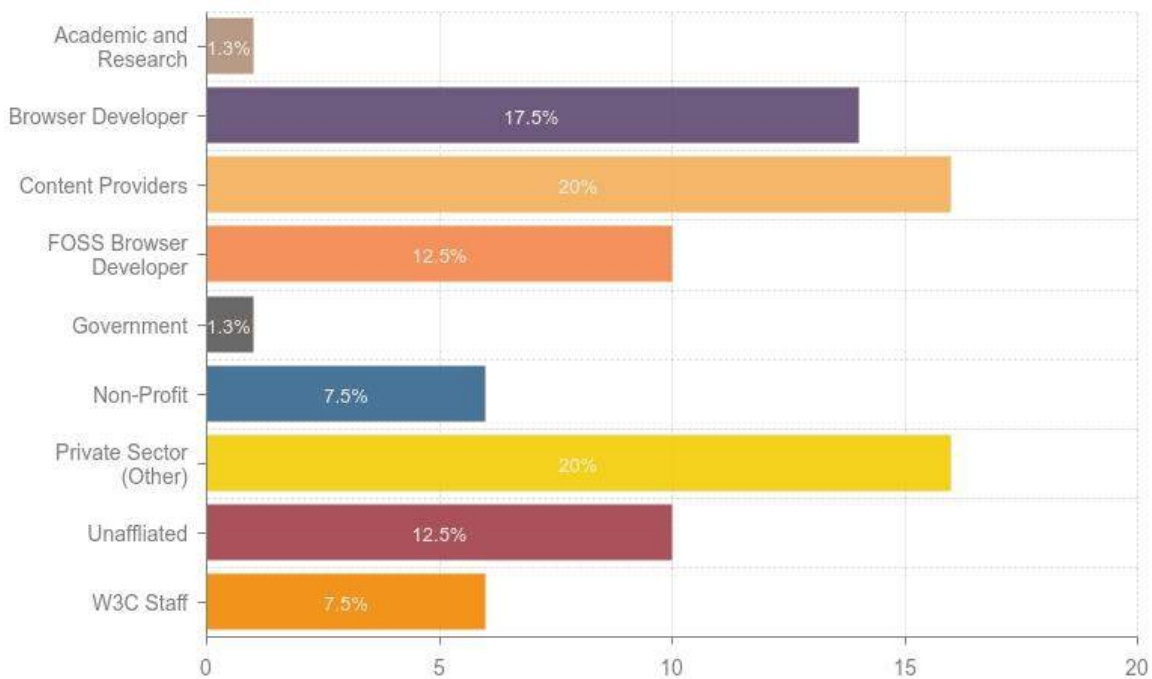
Region	No. of participants
Africa	0
Asia	1
Australia and New Zealand	5
Europe	31
North America	42
South America	1
Total	80

Similar disparities were also demonstrated in relation to the regional distribution of participants. In total, of the 80 participants that posted 5 or more messages on the W3C mailing list, only two were from non-western countries (Europe, North America, Australia and New Zealand), with no participants from Africa and only one from South America.

Surprisingly given a large number of member organisations headquartered in Asian countries, only one participant in the mailing lists was based in Asia.

Aside from the fact that the specification itself was authored and proposed by three US companies (Google, Microsoft, and Netflix), this trend may partially be explained by a more prominent US tradition of civil society engagement in issues related to DRM and fair use, particularly in the context of the perceived excesses of the DMCA. Nevertheless, the limited regional distribution of participants remains a concern, particularly since the implementation of the EME specification would impact media consumption and encryption on a global scale.

Figure 6.8: Mailing list participants by stakeholder group



On a more positive note, the analysis of participants by stakeholder group demonstrated extensive participation in the mailing list discussions from a broad range of sectors (see figure 6.8). Crucially from a legitimacy perspective, contributors to the mailing lists included representatives from a range of consumer and user interest groups as well

as unaffiliated individuals and members of the public. The diversity and breadth of participation in mailing lists can in part be explained by the decision of working group chairs to keep relevant mailing lists open to the public. As a result, there were very few barriers to participation for individuals who wished to express their views on the standard. As above, these findings contradict the popular view of the W3C as a highly insular and exclusive organisation and suggests that the consortium may be more open to public participation than many assume.

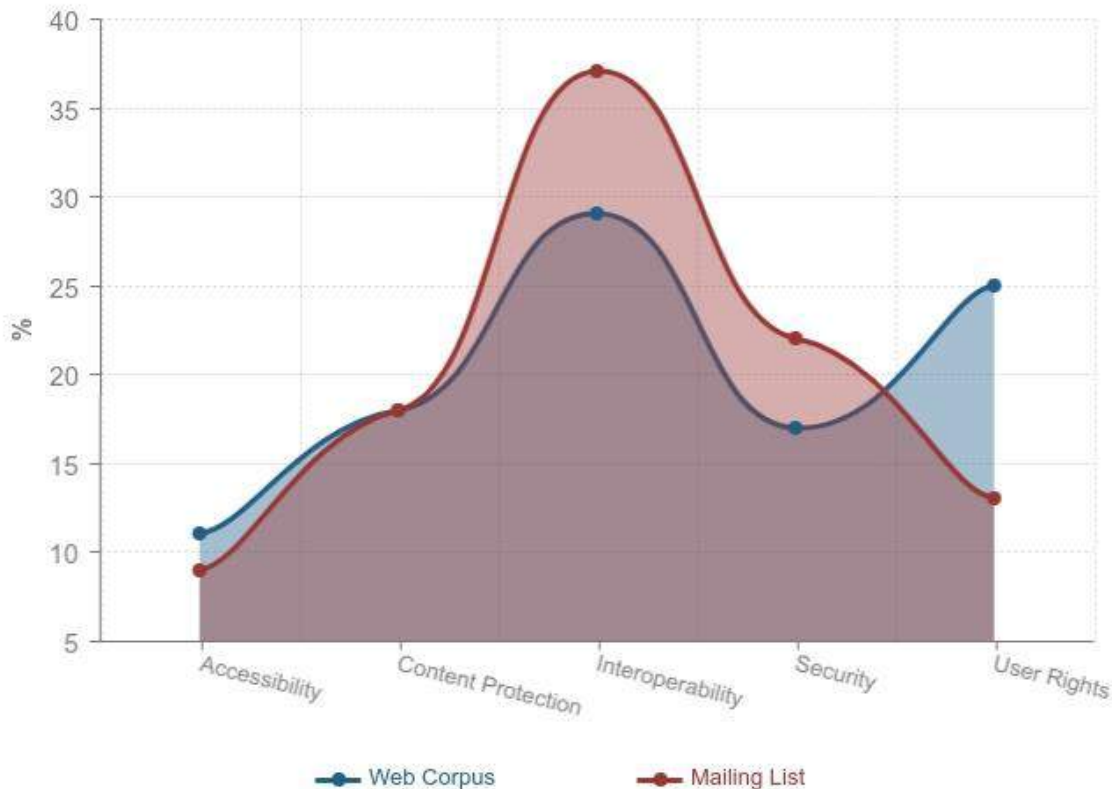
Despite the positive findings in relation to the sectoral distribution of participants, taken together, the analysis of participation in the EME development process, highlights a number of concerns related to diversity which are consistent with broader trends in the sector (Prakash, 2016; Updegrave, 2008). The findings of this research thus support growing calls for the W3C and other standards bodies to do more to promote greater involvement of women and stakeholders from developing countries in standardisation.

Discursive inclusion

Finally, in addition to representation and participation, discursive inclusion was also assessed as an indicator of inclusivity. To analyse discursive inclusion, a thematic analysis of sampled sources from the web corpus was conducted in order to identify the key discourses and issues of concern (accessibility, content protection, interoperability, security and user rights). Messages from the mailing lists were then coded for the presence of these topics, after which the relative frequency of occurrence for each issue was compared across both datasets.

Analysis of the mailing list coding revealed that all areas of concern which were present within the web corpus (public space) were also present within the mailing list deliberations (empowered space).

Figure 6.9: Discursive inclusion by issue node



In addition to being represented indirectly, analysis of the mailing list revealed that many of the ideas expressed in the public space (web corpus) were also directly referenced by mailing list participants who would often include hyperlinks to external sources including blogs and articles in the body of their messages. These links were often used to strengthen the arguments being made or to demonstrate support for a position from the wider community. Perhaps the most notable example of this kind of hyperlinking was the first Formal Objection raised against EME, submitted by Andreas Kukartz in May 2013. In that case, an article published on the EFF's website a few days earlier was referenced by Kukartz in lieu of a formal explanation for the submission of his Formal Objection.

The use of hyperlinks in this way is an example of what Stromer-Galley (2007) termed 'sourcing', a deliberative practice in which external information is introduced into a deliberation in order to support the arguments being made. This prominence of this

practice within the mailing lists suggests that participants were not only aware of the external controversy but were also open to the idea that those views should inform the discussions that were taking place within the mailing lists²⁴.

Although all issues present within the web corpus were also present within the mailing lists, the analysis did reveal a few minor variations in the relative weighting of issues between the two datasets (see figure 6.9). Specifically, the findings showed that the issues of interoperability, and to a lesser extent security, were discussed more extensively on the mailing lists than within the web corpus, whereas the issue of user rights was discussed much less on the mailing lists than it was outside of the W3C. As will be discussed in more depth below, these findings are partly a reflection of the fact that the discussions of interoperability and security were more constructive, and so required far more extensive discussions in order to accommodate the elaboration of mediating proposals. Conversely, the relative brevity of the discussions on user rights can in part be explained by the unwillingness of some participants to actively engage in non-technical discussions which were beyond their field of expertise.

Despite these minor variations, on the whole, these findings indicate a high level of discursive inclusion within the mailing lists. This suggests that W3C members were effective in their role as political trustees and were successful at facilitating the 'transmission' of discourses from the 'public space' to the 'empowered space' of the mailing lists (Dryzek, 2000). The findings, thus contradict previous characterisations of the W3C as somehow isolated or detached from the interests and concerns of ordinary users and developers. As above, these findings are a reflection of the openness and publicity of the process as well as the relative ease with which individuals were able to contribute to discussions.

²⁴ In total 35 out of the 205 web corpus sources analysed were linked to from the mailing lists at least once.

Transparency

As discussed in chapter four, within the W3C, the publicity of documents and mailing lists is governed by a classification system in which content is marked as either, public, member-only, or team-only. In order to assess the transparency of the W3C's process, the confidentiality classification of key documents and mailing lists were monitored for the duration of EME's development. To be considered as legitimate it was expected that all mailing lists and documents relevant to the development of EME would be classified as 'public'.

The findings of the analysis revealed that for the duration of EME's development all information relevant to the specification including, the specification document, requirement documents, and minutes from teleconference meetings were classified as 'public' and were therefore freely available to access via the W3C website. In addition, the discussions concerning the specification's development took place entirely on *public* mailing lists, meaning that anyone with an internet connection could contribute. All contributions to discussions were made available through the W3C's mailing list archives. Furthermore, as a condition of EME's transition from one stage of the development process to the next, the HTML Media Working Group was required to provide public documentation of all amendments to the specification, a statement that all Working Group requirements had been met, and a record of all Formal Objections raised.

While the information and discussions concerning the initial development of the EME specification were made public, it should nonetheless be noted that in line with W3C procedures, once the EME specification reached the stage of a 'Proposed Recommendation' it was subject to review by the Advisory Committee before being published as an official W3C recommendation. Unlike most other working group mailing lists, the deliberations of Advisory Committee are classified as member-only and are therefore confidential. Although the W3C did provide a dispensation of committee

members' comments, following the conclusion of the formal review in July 2017, no public record of which organisations had supported the proposal was published. Furthermore, despite the unprecedented nature of the Advisory Committee vote on EME – prompted by the EFF's decision to appeal against the approval of EME as a recommendation – no formal voting record was made public.

For many commentators, this lack of transparency at the crucial decision-making stage was highly concerning, as Bryan Lunduke (2017) commented;

'[this lack of transparency] makes [the W3C] a country club—organisationally speaking. Would you trust the verdict of secret votes coming out of a country club that you can't be part of because you can't afford it? I mean, if I'm going to let a country club decide things for me, at least let me know how the members vote so I can choose whom I high-five and buy a burger—and those who don't deserve the high-five or the burger. This sort of transparency is critical'.

While the lack of transparency regarding the Advisory Committee's activities and the voting record does raise concerns, on the whole, the findings of this research demonstrated relatively high levels of transparency, with discussions conducted in public view and with all information relevant to the development of EME made freely available. As such, this research did not find evidence to support previous characterisations of the W3C as a mostly closed process (Vincent and Camp 2004).

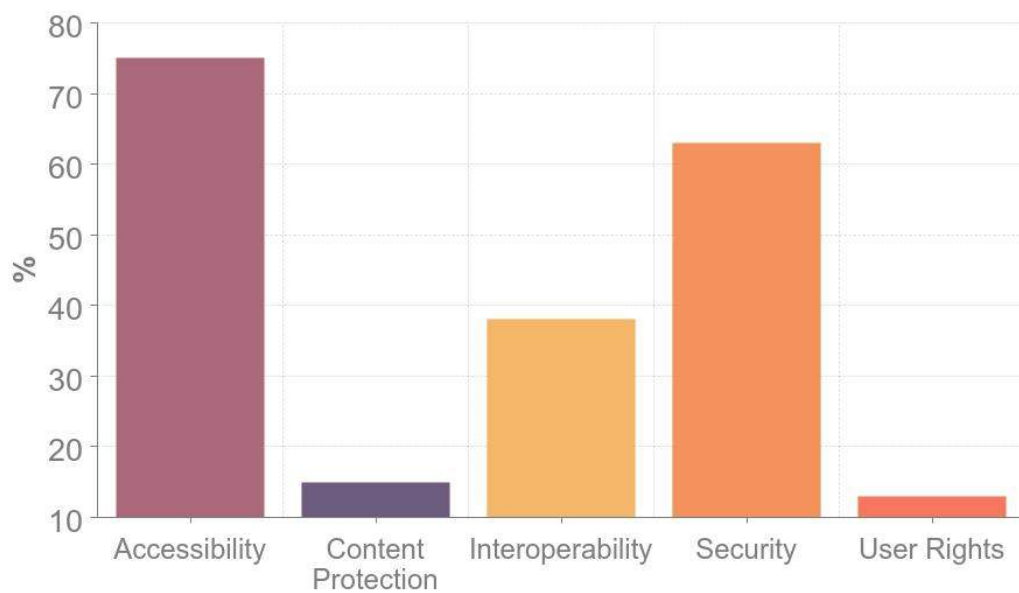
Constructiveness

The W3C process as with other forms of deliberative governance is premised on the idea that through rational discussions of relevant issues, participants will be able to identify shared values and determine an agreed course of action. In the context of the W3C, consensus (or more precisely "rough consensus") can be understood not in terms of unanimous support for proposals but rather by the absence of strong objections or widespread dissent (W3C, 2017d). As such, when assessing the constructiveness of

working group discussions the goal of this research was not to assess the extent to which discussions yielded a unanimous consensus, but rather the extent to which participants engaged in constructive dialogue orientated towards the identification of common values, objectives or ideals (see chapter 3).

To analyse the constructiveness of discussions concerning EME, examples of constructive speech within sampled mailing list messages were coded. A matrix analysis was then performed to highlight variations in constructiveness across the five policy areas studied.

Figure 6.10: Constructiveness by issue node



Issue Node	Constructive (%)
Accessibility	75
Content Protection	15
Interoperability	38
Security	63
User Rights	13
Average	41

The findings of this analysis revealed significant variations in the constructiveness of deliberations, with discussions of accessibility, security, interoperability performing well and discussions of user rights and content protection performing very poorly.

The high levels of constructiveness exhibited within the discussions of accessibility, interoperability and security can in part be explained by widespread acceptance of the importance of these issues as metrics of substantive quality (normative meta-consensus) as well as their relevance to the EME standards development process (epistemic meta-consensus). On the one hand, the existence of a shared understanding and interpretation of the importance, meaning and value of the concepts of security, accessibility and interoperability – what Stevenson and Dryzek (2012) would refer to as ‘normative meta-consensus’ - allowed contributors engage each other in productive dialogue since the pursuit of these objectives were already understood to be desirable. On the other hand, the mutual recognition of the relevance of these issues to the development of EME – what Stevenson and Dryzek (2012) would term ‘epistemic meta-consensus’ - helped to ensure that participants made genuine attempts to find solutions, since the beliefs about the potential impact of specification on these issues were widely accepted to be credible. Thus, despite some differences in the emphasis or importance that contributors ascribed to particular values, discussions of these topics were successful in yielding a wide range of technical and non-technical proposals intended to address or at least alleviate the issues raised.

While participants widely accepted the importance and relevance of these topics, analysis of the mailing lists revealed that there nevertheless remained strong differences in participants’ interpretation of the range of options which were available to the W3C to resolve the issues identified - or what Stevenson and Dryzek (2012) refer to as ‘preference meta-consensus’. As such, although a large number of mediating proposals were initially suggested, only a small number of these were able to generate sufficient interest or consensus to be actively pursued or implemented.

In the case of security discussions, for example, critics argued that since, in practice, implementations of EME would require integration with a CDM, the W3C should do more to specify a CDM which could be implemented safely. By leaving the specification of the CDM to third-parties, critics argued that the W3C was effectively mandating the implementation of proprietary software as a standard, something which opponents argued was fundamentally counter to the W3C's principles and the values of the open web. As Danny O'Brien (2013) argued;

'EME and other protected media proposals are different from other standards. By approving this idea, the W3C has ceded control of the "user agent"... to a third-party, the content distributor. That breaks a—perhaps until now unspoken—assurance about who has the final say in your web experience, and indeed who has ultimate control over your computing device'.

In response, proponents argued that it was not the place of the W3C to dictate the manner in which its standards were implemented within browsers. For them, decisions regarding the implementation and the specification of CDMs should be left to the browsers themselves, arguing that marketplace competition between different browsers would be sufficient to ensure that the standard was implemented in a way that would minimise risks to users. As Mark Watson (2013a) put it;

'Market competition will lead to browsers developing more security systems since consumers will have a choice... which through the operation of competition pushes these vendors towards honesty and transparency'.

In addition to demands that the W3C specify a standard CDM, the EFF and its supporters also argued that in order to mitigate the risks posed to security researchers by the anti-circumvention provisions of the DMCA, members of the W3C should enter into a covenant promising not to sue security researchers who circumvented CDM protections to audit

them for security flaws. Although the proposal initially received expressions of support from within the working group, after being referred to the Advisory Committee for approval it was determined that the proposal lacked the consensus needed to be introduced as an exit condition of the specifications progression to recommendation status. As a compromise, the W3C announced that it had begun work on a set of voluntary guidelines for the responsible disclosure of security flaws, according to which companies would promise not to seek prosecution under the DMCA, so long as 'researchers provide a "reasonable" time period for the company to address the issue, include enough information to reproduce the issue, and make a reasonable effort to avoid service disruption' (Porup, 2017). Whilst this move was welcomed as a positive step by some, others, including the EFF, dismissed the proposed guidelines as woefully inadequate and criticised the W3C for what they perceived to be the consortium's reluctance to stand up for the interests of users and researchers, As Cory Doctorow observed in comments made to Ars Technica technology news website;

"The entire supposition that the W3C should engage in work to create a right to sue over embarrassing disclosures, and then mitigate this by offering an optional set of guidelines for when companies would exercise that right, is totally illegitimate' (Doctorow cited in Porup, 2017).

This lack of agreement regarding the range of solutions which were available to the W3C or 'preference meta-consensus' was also evident in discussions on the topic of user rights, where the perceived incompatibilities of DRM with open web principles led critics to demand that the W3C take a principled stance in opposition to the development of content protection (Stevenson & Dryzek, 2012). While few critics genuinely anticipated that ruling EME as out-of-scope for the W3C would seriously help stymie the proliferation of DRM, it was nevertheless argued that by adopting a principled position, the W3C could nonetheless score an important symbolic victory or at the very least deprive proponents of

DRM the legitimacy that a W3C recommendation would bestow. As Zak Rogoff (2017) explained;

‘Of course, a refusal to ratify could not immediately stop the use of DRM, but it could meaningfully weaken the position of DRM in the court of public opinion, and put EME proponents Netflix, Microsoft, Apple, and Google on notice that a very prominent figure was willing to stand up to them on behalf of users. Changes in society's technological infrastructure require political movements, not just technological arguments, and political movements benefit greatly from the support of prominent figures’.

In response to these demands, proponents of the specification denied that the W3C could have a tangible effect on, what they argued was, the inevitable development of content protection for the web. In contrast to opponents' view of the W3C as a strong and influential body, proponents instead portrayed the W3C as ultimately powerless to stop content providers from using encryption for HTML5 video. In this way, proponents sought to downplay the importance of the W3C's decision to accept the work on EME as 'in-scope'. Instead, they argued that the choice faced by the W3C was not one between DRM or no DRM, but given that copyright holders were unlikely to accept unencrypted streaming of their content, simply whether it would be better for the technology to be developed through an open, transparent and collaborative process, or not. For proponents, therefore, it was only through active engagement with the work on content protection within the W3C that genuine concerns regarding security, accessibility and interoperability could be addressed. As Director Tim Berners-Lee (2013) insisted;

‘We want a web which is rich in content. We want a web which is universal in that it can contain anything. If, in order to be able to access media like video on the web, we are required to have some form of content protection we feel it is better for it to be discussed in the open at W3C. We feel it would be better for

the technology to be in a browser and better for everyone to use an interoperable open standard’.

Together, the examples above, demonstrate not only differences in how participants believed that the W3C should handle public policy concerns but also competing interpretations of the role of the consortium as an institution of internet governance. Although proponents of the specification acknowledged the importance of addressing issues such as accessibility, interoperability and security as part of the standards process, most nevertheless interpreted the W3C’s role in the resolution of such matters as limited. Commentators such as Foliot (2013d) for example, noted how the consortium's status as voluntary consensus organisation meant that it lacked any regulatory power with which to enforced its standards and so sought to downplay the influence that the organisation could be expected to exert over its members. As Foliot (2013d) himself insisted;

‘The W3C are not the internet police - they are a standards body. They have an important, perhaps critical, role to play in guiding the development of the web, but they do not define business rules or policies for their membership, or for the wider world-wide-web, nor do they "enforce" these standards: they put them out there, and implementers are free to use them, or not’.

In contrast to this perspective, opponents of the specification perceived the W3C as wielding considerable ‘soft power’ and insisted that the consortium be willing to use its influence over members to ensure the implementation of its web technologies in a way that was secure and consistent with its own values and founding principles. As John Sullivan (2013) put it;

‘[DRM] would fly in the face of the principles that the W3C cites as key to its mission ... The W3C can't *stop* companies from pushing DRM, but it can join

us in condemning it, and it can refrain from making it easier for companies to work against the principles of the web’.

In addition to a lack of preference meta-consensus regarding the W3C’s role, discussions of user rights and content protection – both of which performed poorly in terms of constructiveness – were also characterised by a series of more fundamental disagreements relating to the validity of competing values (normative meta-consensus) and beliefs (epistemic meta-consensus).

Firstly, whereas the potentially harmful effects of the EME on the accessibility, interoperability and security were recognised or at least considered to be feasible, the impacts of the specification on the fight against online copyright infringement and principles such as fair use and access to knowledge were far more contested. Discussions of content protection for example, repeatedly focussed on the issue of DRM’s effectiveness in preventing piracy, with participants deeply divided about the specifications expected benefits.

For proponents, the specification would provide a necessary and effective tool to allow content creators to take control of the distribution of their creative works online. As David Singer (2013) argued;

‘You might be surprised at how difficult to break some schemes have proved.

The goal of DRM is basically to alter the balance between honesty and dishonesty... People used to talk a lot about ‘friction-free copying’ -- it’s way easier to copy an eBook than photocopy a paperback. DRMs fundamentally add friction.

Critics, however, denied that the specification would deliver the benefits that its authors claimed. In particular, they highlighted past failures of DRM to prevent copyright infringement as well as the technologies vulnerability to circumvention. As Tab Atkins Jr. (2013) observed,

‘Everyone recognises that DRM doesn't actually work, and no matter what you do, the media will be available DRM-free on filesharing networks soon after release (or quite often, before official release). This is *at most* a picket fence that some people honour out of a sense out of respect.’

This lack of agreement regarding the feasibility of competing beliefs, or ‘epistemic meta-consensus’, severely limited the capacity of participants to develop mediating proposals since both sides believed that each others counter-claims were unrealistic.

Secondly, and perhaps more fundamentally discussions of user rights and content protection were also characterised by a general lack of consensus regarding the range of values and principles that should be considered as relevant to the development of EME (normative meta-consensus). In the case of user rights, for example, participants were deeply divided about precisely whose rights and interests the W3C should seek to protect.

Authors and proponents of the specification argued that it was the W3C’s responsibility to promote a web that is rich in content. For contributors such as Jeff Jaffe, this could only be achieved if the consortium helped to protect the rights of content creators and owners. As Jaffe himself (2013) argued;

‘We all aspire for a rich web experience. Principled arguments for content protection begin by pointing out that the web should be capable of hosting all kinds of content and that it must be possible to compensate creative work. Without content protection, owners of premium video content – driven by both their economic goals and their responsibilities to others – will simply deprive the open web of key content’.

In contrast to this view, critics argued that the W3C’s role was, first and foremost, to act in the interests of web users and consumers and to protect open web principles against the collateral effects of DRM. As Kornel Lesinski (2012) argued;

'I don't know how much member companies are entitled to, but I was under the impression that W3C is driven by ideology, not by business requirements of 3rd parties and that W3C's ideology was much more aligned with FOSS's than RIAA/MPAA's.'

In many ways, the pattern of these discussions of content protection and user rights followed those of the fractious debates which took place during the 'copyright wars' of the 1990s and 2000s (see above) (Patry, 2009). Now, as then, discussions were characterised by a central division between two competing and contradictory imaginaries of the web as a 'marketplace' and a 'commons' (Bollier & Watts, 2002; Stallman, 2002). These imaginaries reflected not only competing beliefs about the appropriate balance between intellectual property rights, fair use and access to knowledge online but also distinct interpretations of the nature and value of property, creativity and ownership (Boyle, 2003; Lessig, 2004). As with disagreements regarding the feasibility of competing beliefs, differences over the interpretation of these values and whether or not they should be considered as part of the process, severely limited participants' ability to achieve consensus.

Since the notion of meta-consensus does not require that participants reach unanimous consensus on the variety and weighting of values to be considered, the presence of such disagreements should not necessarily be interpreted as evidence of deliberative failure (Stevenson & Dryzek, 2012). Indeed, given that the debates concerning fair use and copyright have become so polarised and deeply ingrained over the past two decades, the failure of the process to yield consensus on these issues should come as no surprise. However, what is more concerning is that the findings indicate not only a failure to reach consensus but a noticeable unwillingness on the part of some participants to actively engage with the concerns of their opponents or to consider mediating proposals.

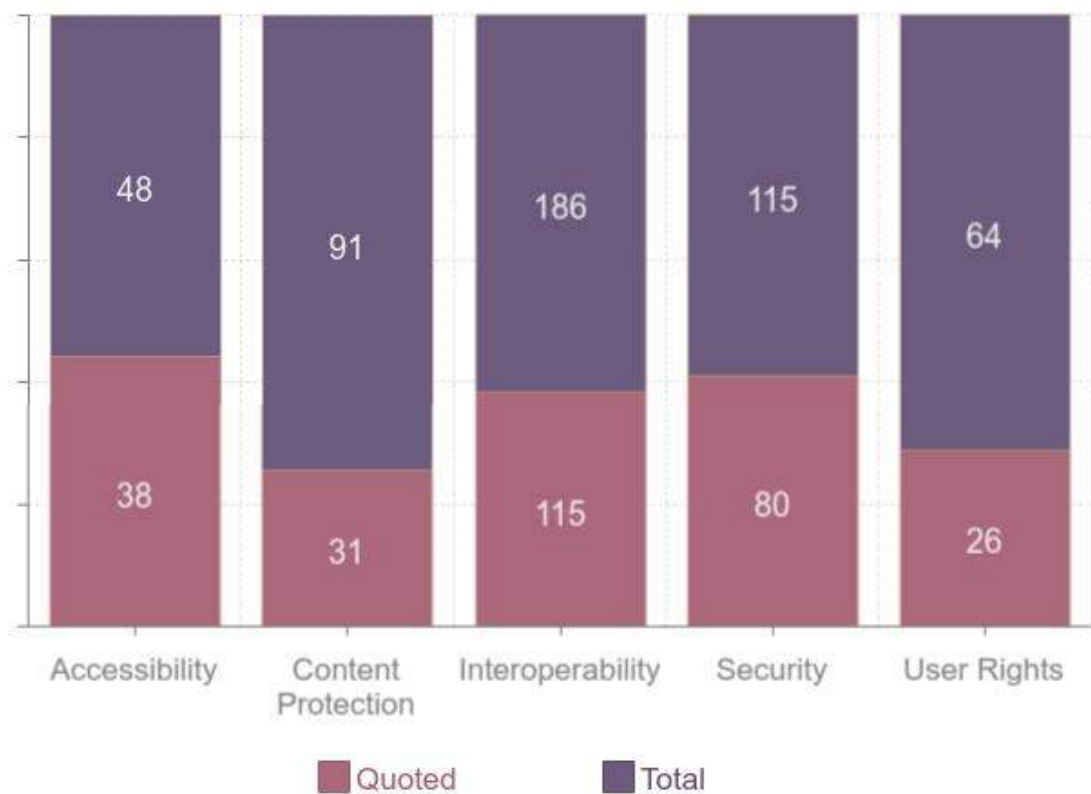
While the failure of the process to generate consensus on these issues could be interpreted as evidence of the limitations of deliberative approaches in the context of

highly polarised debates (Mouffe, 1999), here I argue that it was, in fact, symptomatic of a much broader failure of the process to facilitate engagement with the principled or non-technical objections to EME, as I shall now explain.

Deliberativeness

The second indicator used to assess the throughput legitimacy of the W3C process was deliberativeness. In order for the process to be considered procedurally legitimate, it was expected that the arguments presented within the mailing lists would be responded to and addressed. To assess the deliberativeness of the process, quoted text within the body of reply messages was coded to one of several issue-specific "QUOTED" nodes. The number of messages which included text coded to a specific issue node, i.e. "SECURITY" was then compared with the number of messages which included text coded to that issue's corresponding "QUOTED" node, i.e. "QUOTED SECURITY".

Figure 6.11: Deliberativeness by issue node



Analysis of the deliberativeness of the mailing lists revealed similar findings to the analysis of constructiveness, with discussions of security, accessibility and interoperability performing well and discussions of content protection and user rights performing poorly. As above, the relatively high levels of deliberativeness exhibited within discussions of accessibility, interoperability and security can in part be explained by mutual acceptance of the importance of these issues as metrics of substantive quality as well as their relevance to the development of EME.

In addition, discussions of these issues also benefited from the existence of clearly defined and delineated policies and procedures for handling concerns. In the case of accessibility, for example, concerns raised by critics were quickly referred to Accessible Platform Architectures Working Group (APA WG), chartered by the W3C specifically to consider the effects of its standards on the ability of people with disabilities to access the web. The experience and expertise of the W3C and its staff in dealing with questions related to these issues meant that the consortium could draw on well-established procedures as well as the input of experienced individuals and specialist working groups to provide expert advice and assistance in the resolution of any concerns raised. As a result, mailing list participants could be assured that their concerns would not only be listened to but also appropriately addressed.

Unlike the issues of accessibility, interoperability and security which could all largely be considered as the unintended consequences of specific implementations of content protection - and so potentially resolvable through the application of technical fixes – the issues of content protection and user rights explicitly concerned the validity of the DRM's intended purpose; namely, to place limitations on personal uses of digital content as a means of preventing copyright infringement and encouraging the creation of new content. By raising these issues, critics sought not to comment upon how the technical specification might be improved but rather to call into question the very need for DRM as well as the validity of its inclusion as part of the open web platform. Put another way, by

referencing these issues, critics attempted to question not *how* the specification could be implemented but rather whether - given outstanding questions regarding the effectiveness of DRM as well as its incompatibility with user rights – it *should* be implemented at all.

In order to address these questions, critics argued that it was imperative for the W3C process to be orientated not only towards the administration and fulfilment of technical requirements, but also the critical scrutiny of those requirements. This would require the W3C and its members to look well beyond the technical details of the proposal to contemplate its significance for the broader social and economic and cultural issues such as freedom of expression, access to knowledge and the nature of creativity, property and ownership. As Emmanuel Revah (2013) noted:

‘The W3C does not exist in a vacuum, and it’s reasonable to consider the consequences of our decisions within W3C on the wider world’.

In contrast to other topic areas, these were issues about which there was far less consensus among participants. Furthermore, unlike the issues of accessibility, interoperability and security these were also topics with which the W3C had little experience of dealing with, and for which the consortium had no established policies or procedures. Given the novelty of these issues for the W3C and its members, critics argued that engagement with these topics would thus also require participants to reflect upon the consortium's mission statement and the kind of web that they wanted to create.

In response to these demands, most proponents of EME sought to distance deliberations from questions concerning public policy, arguing that such ‘philosophical’ or ‘legal’ issues were matters for ‘Congress’ or ‘the courts’ and not a standards organisation (Watson, 2013b). Instead, the specification’s authors and supporters attempted to refocus the debate around technical questions regarding the delivery of the stated requirements. As John Foliot (2013c) argued;

'If you are concerned that this FPWD has technical holes, or you have an alternative idea to satisfy that requirement, I urge you and others to either a) provide further details on the technical problems, or b) start your own alternative extension specification that meets the use-case requirements. Throwing up our collective hands and declaring "DRM is evil" is not the answer'.

This narrow view of the W3C as a purely technical organisation was repeatedly endorsed by the Chairs of the working groups, who, in their capacity as the moderators of the mailing lists, regularly intervened in discussions to request that participants refrain from making comments about 'non-technical' matters or at least attempt to reframe their queries in terms of technical bugs which could be directly addressed. As this comment from HTML Working Group chair Paul Cotton (2013) demonstrates;

'Please do NOT start email threads on this list arguing that EME or DRM is out of scope for the HTML WG. If you want to discuss such matters, please take them somewhere else'.

While notable even during the early stages of EME's development, this insistence by working group chairs that contributors refrain from expressing principled based objections to the specification became far more prominent following Berners-Lee's (2013) decision to declare content protection as 'in scope' for the HTML Working Group. For supporters of the specification, this was interpreted as a tacit acceptance by the Director of the principle of DRM. For opponents, however, Berners-Lee's decision to allow the working group to explore potential solutions to content protection requirements did not make observations regarding the collateral effects or effectiveness of DRM invalid, and should not have been used to exclude from the discussions arguments unrelated to the specification's technical implementation.

Quite often contributors who cited principled objections to EME were referred to the Restricted Media Community Group mailing list – established in 2013 to consider alternative solutions to copyright holder’s content protection requirements. While this group hosted some of the more productive and deliberative exchanges on EME’s implications for user rights and content protection, as a ‘community group’, it lacked any official status within the W3C process and so did not influence the standard’s development. As a result, some opponents of the specification expressed frustration at working group chairs’ repeated requests that they use the restricted-media mailing list rather than the main HTML mailing lists to voice their concerns; feeling, that these requests were an attempt to marginalise their views. In one instance, these concerns even led group contributor Fred Andrews to request that the community group be closed down to prevent dissenting voices in the main HTML mailing lists from being silenced. As Andrews (2013b) himself argued;

This Community Group has been abused by some members of the HTML working group to divert discussions that they do not agree with away from the HTML working group. This includes the Chairs, and they have not been rained in by the W3C, and in fact, the W3C has stated that the views expressed here will not be considered until a later stage in the process and the W3C has refused to define how they will be considered... I propose closing down this community group and directing the HTML working group to accommodate the members within the working groups as voting invited experts.

By framing the deliberations as purely technical, the chairs of the working groups acted to limit the scope of discussions within the mailing lists to a few core technical issues. As a result, discourses which attempted to challenge assumptions regarding the requirements for content protection or question the appropriateness of EME’s inclusion as part of the open web platform from a non-technical perspective were judged to be ‘out-of-scope’. Thus, although expressions of principled based objection to content provider’s

requirements were present in the mailing lists, the unwillingness of proponents of EME to justify these requirements or engage with non-technical counter-discourses, meant that despite their apparent inclusion, opportunities for participants to reframe the deliberations were for the most part curtailed.

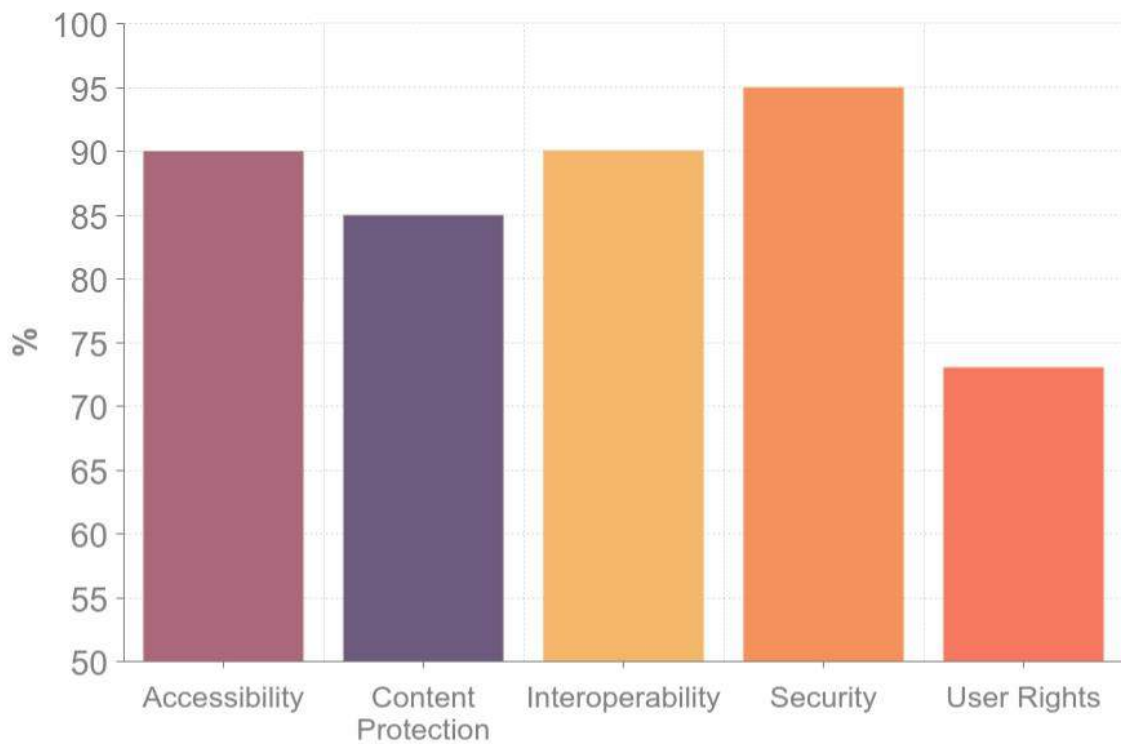
Contrary to most contemporary critiques of the W3C, these findings suggest that the consortium not only exhibits signs of 'external exclusion' but also from what Young (2002) described as 'internal exclusion', whereby discourses transmitted to the 'empowered space' of the mailing lists are marginalised, ignored or otherwise excluded by participants. These findings also provide evidence to support the view that 'deliberative frames' can play a significant role in limiting the scope of deliberations and the range of possible deliberative outcomes (Barisione, 2012). More generally, the failure of participants to actively engage with concerns related to content protection and user rights raises serious concerns about the willingness and capacity of W3C to adequately address public policy issues, and in particular those which fall outside of its conventional field of expertise.

Respect

In addition to the indicators of constructiveness and deliberativeness, throughput legitimacy was also assessed in relation to respectfulness – which for the purposes of this study was taken to mean an absence of abusive language or *ad hominem* attacks. In order to assess respectfulness content coded to a specific issue node, for example, "SECURITY" or "USER RIGHTS", which also contained disrespectful or abusive language was coded to a "DISRESPECT" node. A matrix coding analysis was then conducted to identify overlaps between the coding of each issue node and the "DISRESPECT" node.

Analysis of the respectfulness of the mailing list discussions revealed a very similar trend to the analysis of deliberativeness and constructiveness, with discussions on accessibility, interoperability and security scoring the highest in terms of the respect and content protection and user rights scoring the lowest.

Figure 6.12: Respect by issue node



Issue Node	Respectful (%)
Accessibility	90
Content Protection	85
Interoperability	90
Security	95
User Rights	73
Average	86

As with deliberativeness and constructiveness, the respectful nature of the discussions of accessibility, security and interoperability can largely be attributed to a shared understanding of the importance and relevance of the topics being discussed as well as shared definitions of key terms and the objectives to be realised. Although the heated nature of the deliberations more generally meant that participants would occasionally be provoked into the use of disrespectful language - especially in the context of discussions regarding proposals such as the EFF's covenant in the case of security or

the need for a CDM specification in the case of interoperability - on the whole, these topic areas were characterised by professional and respectful conduct.

In contrast to discussions of security, accessibility and interoperability where participants could frame their arguments in terms of commonly shared values, beliefs and objectives, discussions concerning user rights and to a lesser degree content protection, were characterised by heated exchanges in which participants often expressed frustration with the perceived failure of their fellow contributors to acknowledge or accept the validity of the arguments they presented. As the controversy developed, proponents of the specification also became increasingly exasperated at the apparent intransigence of their opponents as well as their refusal to express objections in technical terms. As this message from Glenn Adams (2013) demonstrates;

'I don't recognise any of your arguments as technical, nor do I recognise your comparison about cost/benefit as having a technical or substantive basis. You cite no methodology for evaluating proposals for new features; you offer no metrics that demonstrate excessive cost or lack of benefit. You cite no established policies or recognised precedents from which guidance could be obtained. You merely repeat your opinion ad infinitum that EME is DRM, DRM is evil, and therefore EME is evil. We've heard that argument, and though there may be some who are persuaded by it, we are not. So why keep repeating it?'

This irritation at the intransigence and apparent indifference of opponents and proponents respectfully, led to highly fractious and ill-mannered exchanges, with some participants receiving warnings from chairs and moderators about their language and professional conduct.

Figure 6.13: Posts from the 'W3C memes' Tumblr page



Disrespectful comments often took the form of *ad hominem* attacks and included references to contributor's motivations, religious beliefs, and professional competence. Most commonly though, disrespectful messages related to the characterisations of participants as either; corporate 'sell-outs', who were willing to abandon the principles of the open web in the pursuit of financial gain, or, conversely, as naïve and anti-commercial 'hippies' who did not understand the commercial realities of the content industries (see figure 6.13). As the selected comments below demonstrate:

'I've lost trust and faith in the W3C... When I came-up with the catch-phrase "The Hollyweb", I thought that perhaps I was being a little extreme. But, now that I've seen how far Jeff and the W3C will go to defend and help Hollywood in their "plight," I realise that I did not go far enough. So, for *this* issue, I will now be focusing my efforts entirely on raising awareness about the corruption within the W3C and why they are doing more for the special interest than for what's in the public interest.' (Gay, 2013)

'All of this ongoing teeth gnashing and wailing about DRM is all just noise... The primary interest of *any* business is to a) stay in business, b) make a profit in business... Everything else is fairy dust: wishing and hoping

for a better world where everyone sings Kumbia and has free everything ain't gonna happen. It simply won't. Why is this so hard to understand?' (Foliot, 2013b)

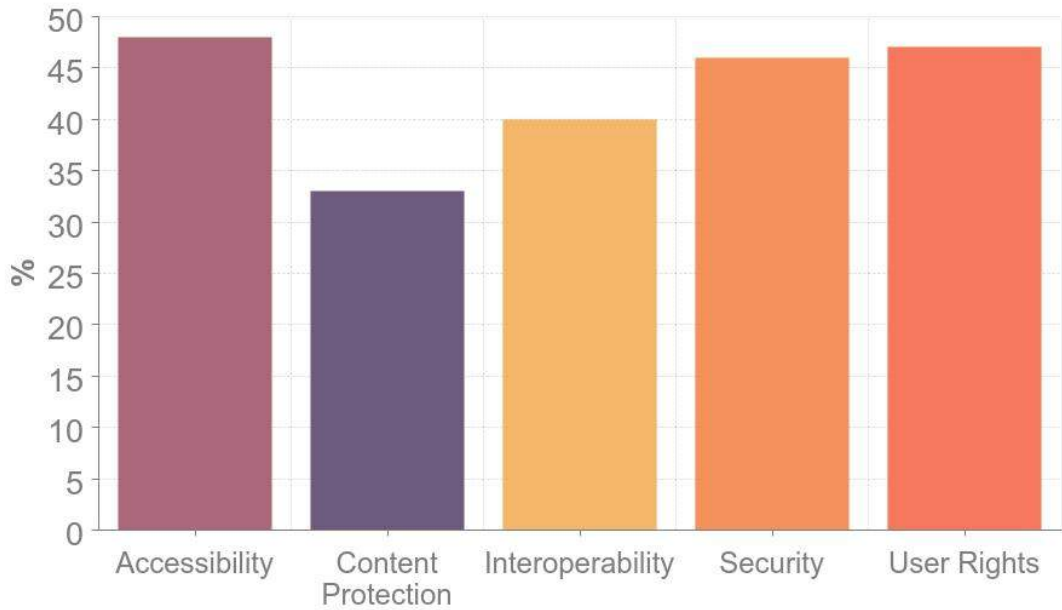
Although these types of personalised attacks were present throughout the mailing list as a whole, they were noticeably more prominent in discussions concerning user rights and to a lesser extent content protection, which would occasionally strayed onto broader and more contentious topics such as the digital economy, access to knowledge, free culture and the nature of creativity. The prevalence of *ad hominem* attacks within threads on these topics is telling since it clearly indicates failure of the process to facilitate respectful and productive discussions in circumstances where there did not already exist a degree of consensus.

Justification

The final indicator used to assess the throughput legitimacy of the W3C was justification. In order for the process to be deemed legitimate, it was expected that participants would be able to provide evidence or reasons to support their positions. In order to assess justification, content from sampled mailing lists messages was coded for examples of supporting evidence or reasons. A matrix coding analysis was then conducted to identify variations in the level of justification between policy issues.

Analysis of levels of justification revealed that while there were no substantial variations between the topics of accessibility, interoperability, security, or user rights, the levels of justification in discussions of content protection were significantly lower.

Figure 6.14: Justification by issue node



Issue Node	Justified (%)
Accessibility	48
Content Protection	33
Interoperability	40
Security	46
User Rights	47
Average	43

These findings can in part be explained by the failure of content providers to justify their requirements for content protection. Although participants well understood the contractual requirements for web platforms such as YouTube and Netflix to provide robust content protection as part of their license agreements with content providers, the underlying reasons for the license agreements themselves were rarely explained by supporters of the specification. Indeed, while proponents frequently presented the requirements of copyright owners as an explanation for why the specification was needed,

the actual benefits of content protection were not outlined by the representatives of the content providers themselves (very few of whom actively participated in the discussions). For critics of EME who questioned the efficacy of DRM as a means of preventing piracy and promoting the production of creative content, the unwillingness of proponents to provide justifications for their requirements was highly problematic. As contributor to the mailing lists Cobaco (2013) put it;

'What's missing is the reasoning that establishes DRM as a valid charter. Both your post and the director's mail you link to basically boil down to: "this was requested by [*sic*] the Web and TV Interest Group, and we accepted that without further justification" ... What makes you think there is broad agreement that some form of content protection is needed?'

More generally, it was noted during the analysis that some participants used shorthand terminology or failed to provide complete justifications for their positions in the expectation that their fellow contributors were experts in the field or were sufficiently knowledgeable about the specification and related technologies to understand the issues being discussed. Although there was no evidence to suggest that this practice had an adverse effect on the ability of contributors to comprehend the discussions, it is nevertheless worth noting that some deliberative theorists have previously warned that the use of highly technical language by experts and practitioners may have the effect of excluding laypersons or non-experts who may not have the requisite knowledge to adequately understand and assess the arguments being made (Brown, 2009).

In circumstances when participants did provide clear justifications for their arguments, analysis of the mailing lists revealed the use of a wide range of discursive strategies and styles, including the use of storytelling, anecdotes, and even humour (see figure 6.13). However, as described above, principled arguments including the use of moral justifications were widely rejected by working group chairs who insisted that critics

articulate their objections in technical terms only. The enforcement of these restrictions on the manner in which participants could express themselves limited the scope of debates and acted to exclude some participants, including members of the public who lacked the expertise to comment on the technical specificities of the standard. These findings thus support the view of Hamlett (2003), Mansbridge et al. (2012) and others who warn of the coercive effects of specifying certain forms of discourse as 'rational' or 'irrational'.

Key Findings

For much of the past decade, discussions concerning the procedural legitimacy of the W3C have been framed almost exclusively in terms of the consortium's lack of inclusivity and transparency, problems which critics claim to have been caused by the W3C's restrictive membership policies and commercial focus (Schoechele, 2003).

In contrast to those who have portrayed the W3C as a fundamentally closed and insular organisation, this research has demonstrated that the W3C process exhibits some evidence of input legitimacy. Specifically, the findings of the research have demonstrated how the mostly open and public nature of the W3C process meant that there existed very few barriers to participation for those wishing to actively contribute to discussions. This openness, it has been argued, led to high levels of discursive inclusion and facilitated the participation of a diverse range of stakeholders, from representatives of multinational corporations and academics to digital rights activists and members of the public. Furthermore, the research has also shown how despite previous characterisations of the W3C as insular and secretive, the process through which the W3C develops its standards is in fact largely transparent, with key documents including the minutes of F2F and telecom meetings all made publicly available.

Despite these positives, however, the overall findings of this research support the view that the W3C lacks sufficient levels of input legitimacy to justify its development of techno-policy standards. Specifically, analysis of the W3C's membership and participation in the

mailing lists revealed that stakeholders from non-western countries and women were massively underrepresented within the process. Although such disparities are not unusual for technical bodies, given the economic, social and political implications of the standards being developed, these levels of representation are far below what should be expected (Prakash, 2016; Updegrave, 2008).

In addition to the concerns regarding input legitimacy, the research has also raised questions about the deliberative quality of the W3C's standardisation process itself. Specifically, an in-depth analysis of the mailing lists demonstrated that a large number of discussions - particularly those related to content protection and user rights - were characterised by a noticeable lack of reciprocity and an ultimate failure to reach consensus. Although the precise cause of these deliberative failures varied across the topic areas analysed, broadly speaking, conflicts between participants arose as a consequence of competing attempts to frame the nature of the W3C process and the role of the W3C as an institution of internet governance.

In relation to the nature of the process, analysis of the mailing list discussions revealed that participants held very different perspectives about the kinds of valid discourses and arguments that should be considered as part of the W3C standards development process. On the one hand, opponents of the specification argued forcefully that the W3C process should accommodate discussions concerning the relationship between consortium's standards and the broader social and political values and principles which inform its mission. On the other hand, proponents of the specification largely rejected the notion of the W3C as a 'political' process, suggesting instead that contributions to the mailing lists be of a technical nature only. As John Foliot (2013c) argued;

'I believe that it should be out of scope for a technical committee and a standards body to favour one philosophical perspective versus the other: leave the politics of politics to the politicians – this

is (should be) an engineering forum and an engineering discussion'.

In some instances, attempts to frame the process in this way were motivated by pragmatic concerns about the effect that broader public policy discussions would have on procedural efficiency. In this way, it was argued that any attempt to integrate 'philosophical debates' into the standards process would inevitably jeopardise the consortium's ability to respond to market demands by substantially prolonging deliberations. For them, the focus of the W3C should first and foremost be the efficient delivery of technically robust standards which meet the technical requirements of the community, regardless of their social or economic implications. As El Mekki (2013) put it, the 'W3C should certainly not get implied in corporate vs. users, because that's politics and W3C doesn't do politics - it does standards'.

Such interventions highlight not only the commercial pressures faced by the W3C but also the underlying tensions between substantive and procedural legitimacy which are implicit in the consortium's process (see chapters two and five). By emphasising the importance of efficiency and technical quality over procedural rigour, therefore, proponents of the specification were not only expressing a preference for how the standards process should be conducted but also the types of legitimacy that the W3C should enact. While, such substantive claims to legitimacy continue to be important factors in determining the W3C's legitimacy as a whole, in the case of EME, the emphasis of some participants on procedural efficiency at the expense of due process, undermined the deliberative quality the process and led ultimately to the exclusion of counter-discourses which did not concern the delivery of technical requirements.

In other instances, objections to the discussion of matters of public policy were motivated not by technical pragmatism but rather by an apparent ambivalence to the political nature of the standards process itself. Indeed, while some accepted the policy implications of

EME as self-evident, others attempted repeatedly to distance the W3C's work from questions of politics, portraying the consortium, instead, as an objective and politically neutral organisation and driven exclusively by the pursuit of technical compatibility. As John Foliot (2013e) put it, 'the W3C operates using a consensus process which is not a "vote", nor is it a popularity contest - it is based upon consensus around *technical* matters, not policy'.

By framing the discussions in this way, proponents acted to exclude from deliberations any non-technical arguments or value-based judgements as well as any areas of concern that could not be directly addressed by technical proposals. Put simply, while the mailing lists discussions offered participants an opportunity to determine *how* the specification should be designed, the framing of the discussions in techno-scientific terms meant that questions of whether or not the consortium *should* develop the specification in the first place were largely marginalised. These findings would thus appear to support the view of STS scholars, who warn of the potential for technological design processes to uncritically reflect prevailing ideological positions to the exclusion of counter-discourses (Hamlett, 2003).

In the small number of instances when participants agreed that a particular public policy concern should be considered, analysis of the mailing lists revealed that the deliberations were halted further by disagreements regarding the role that the W3C should take in addressing the issues identified. While opponents of the specification believed strongly that the W3C should adopt a principled stance against the inclusion of any form of DRM in the open web platform, proponents of EME rejected suggestions that the W3C should seek to influence the business decisions of its members or impose on them any particular vision of the web.

For some contributors, their rejection of the more progressive and regulatory impulses of the specification's opponents can be viewed quite straightforwardly as a reflection of a

laissez-faire interpretation of standardisation. For contributors such as John Foliot (2013d), the role of the W3C as a regulator or political agent within the standards marketplace should be minimised and responsibility for the identification of requirements and development of web technologies be left as much as possible to individual members and implementers of the technologies themselves. Thus, in contrast to opponents understanding of the W3C as a regulator, many members sought to position the W3C as a purely coordinative organisation, whose primary role was first and foremost as a facilitator of private sector cooperation and administrator of its members' technical requirements. As Foliot (2013d) himself said;

'The role and goal of the W3C, as I see it, is not to prescribe philosophy, but to work towards technical interoperability. That means balancing the needs of both the FOSS and Commercial content communities, not favouring one over the other'.

For other contributors, their opposition to suggestions that the W3C take a more proactive approach in the pursuit of public policy objectives was driven by their belief that the consortium lacked both the capacity and expertise to adequately comprehend the legal or policy implications of its work. Despite the consortium's invited expert policy, which is designed to facilitate the participation of relevant experts from outside the web community, contributors observed how the vast majority of participants were engineers or web developers, most of whom lacked the legal experience necessary to speak knowledgeably about the legal issues raised by EME²⁵.

Finally, for others, the rejection of opponents' demands that the W3C take a principled stance against EME was motivated not out of a libertarian sensibility, concerns about procedural capacity or even support of the specification itself, but rather what they perceived to be a pragmatic realism regarding the influence and power of the W3C. For

²⁵ Participants' uncertainty over many of the legal issues surrounding the implementation of EME was evidenced by the fact that many prefixed their contributions with the disclaimer "IANAL", which in the parlance of the standards community stands for "I am not a lawyer".

Berners-Lee (2017) for example, the W3C's status as a voluntary consensus organisation limited the pressure that the consortium could realistically be expected to exert over content providers and other vendors. Thus, while many proponents of EME sympathised with the objections expressed by critics of the proposal, they nevertheless argued that the W3C lacked the kinds of regulatory power necessary to prevent the spread of DRM. As Berners-Lee (2017) himself put it:

'If the Director of the Consortium made a Decree that there would be No More DRM, in fact, nothing would change. Because the W3C does not have any power to forbid anything'.

Intriguingly, this view of the W3C as a mostly passive and coordinative organisation is in many ways counter to the popular perception of the consortium as a powerful and influential custodian of open web principles and an exemplar of effective internet self-regulation (Russell, 2003). If, as many contributors suggested, the W3C's role is limited, even in cases where there is widespread opposition to proposals, then this raises the question of when, if ever, the W3C would be willing or capable of opposing the interests of its corporate members. As such, the findings of this research undermine the view of the W3C as an effective advocate of user rights and calls into question the capacity of the W3C to defend open web principles against the demands of an increasingly powerful and centralised industrial lobby.

Whatever participants' reasons for rejecting suggestions that the W3C adopt a more proactive approach in defence of its principles, their unwillingness to engage fully with difficult questions related to user rights and content protection once again highlights the contested nature of the W3C mission and its role as an institution of internet governance. The W3C, thus, continues to face the challenge mediating between the conflicting interpretations of its work. In the case of EME, the W3C's outright refusal to endorse a more progressive approach to the policy issues raised demonstrated its failure to do so

successfully and positioned the consortium in opposition to a significant proportion of its membership and the wider web community who interpret its role and legitimacy differently. As Baldur Bjarnason (2017) put it;

‘No matter which side is right, the W3C faces an existential crisis. Either:

The W3C is a shepherd of the web for all, the web on everything, and a web of trust. But now it is fundamentally compromising its own principles in the name of maintaining industry relevance.

Or, the W3C is merely an industry body for browser vendors to collaborate and its mission statement is nothing more than PR to increase buy-in from the smaller, largely powerless, members.

Both can't be true. Neither is good news for the organisation.’

In conclusion, while this research appears to substantiate existing concerns about the procedural legitimacy of the W3C, in contrast to much of the contemporary commentary on the W3C, the findings suggest that these deficits are not merely the result of ‘external exclusion’ or a lack of input legitimacy, but are also caused by forms of ‘internal exclusion’ which result from specific deliberative framings of the W3C and its process. The effect of these hegemonic frames - which attempted to deemphasise the consortium’s policy-making role and restrict discussions to a narrow range of technical matters - was to exclude from the standardisation process non-technical discourses, and as a consequence limit the range of apparently valid deliberative outcomes (Barisione, 2012). As such, while the W3C process performed well in some areas, the overall finding of this research is that the W3C currently lacks the levels of procedural legitimacy necessary to justify its development of techno-policy standards.

Conclusion

“Let all men know how empty and worthless is the power of a king.”¹

(Huntingdon, 1996, p. 199)

In 1992, senior MIT research scientist David Clarke (1992) delivered a speech entitled, “A Cloudy Crystal Ball: Apocalypse Now”, to a plenary meeting of the IETF. In it, the long-time leader of the technical community famously attempted to define the underlying ethos and shared values of the standards community, describing their approach as one of ‘rough consensus and running code’. The phrase was an instant success with Clarke’s audience for whom it provided the perfect slogan to articulate the uniqueness of their community and to differentiate themselves from their rivals at the ISO. It has since been adopted enthusiastically by commentators and scholars alike to describe what is commonly regarded as the standards community’s uniquely deliberative and non-hierarchical approach to standards making and legitimacy (Russell, 2014).

Today Clarke’s comments are widely quoted, but what is often less well cited is the context in which he made them. Delivered amidst the early stages of the internet’s commercialisation, Clarke’s speech (1992) was intended not merely as a celebration of the community’s values but also as a warning of the challenges that the community would likely face as they attempted to ‘manage the process of change and growth’. Highlighting the pressures that commercialisation would inevitably bring to bear on their community and its principles, Clarke outlined a series of values that he believed the IETF would need to balance as the internet and its user community continued to grow. These included the need to ensure an open and inclusive process which left participants ‘time to think’, but

¹ Excerpt from the tale of King Canute and the waves, see: *Huntingdon, H. (1996). Historia Anglorum: The History of the English People (Henry & D. E. Greenway Eds.): Clarendon Press.*

also the need for the community to 'make progress' or as he put it 'keep up with reality' (Clark, 1992). Thus, as much as Clarke's speech was intended to remind its audience of their shared values, in delivering it, Clarke was also seeking to prepare his colleagues for the compromises and challenges that would undoubtedly lie ahead.

As this thesis has demonstrated, the challenge of achieving this balance between procedural efficiency and rigour, that is, between substantive and procedural legitimacy is for contemporary web standards bodies such as the W3C as difficult today as it was in 1992. Specifically, through the analysis of the development of the EME specification, this research has demonstrated how despite the W3C's recent efforts to reform its procedures, the consortium failed to adequately consider the policy implications of its work or ensure the type of open and deliberative process necessary to legitimise its development of the specification.

Firstly, although the findings of the research showed that the W3C process was both transparent and discursively inclusive, they also provided evidence to support existing characterisations of the consortium as a body lacking in diversity and dominated by commercial interest groups. Secondly, the findings also revealed very low levels of throughput legitimacy, particularly in relation to discussions of more novel policy issues such as user rights and content protection. Close analysis of the mailing lists demonstrated that, in many cases, these deliberative deficits were the product of hegemonic deliberative frames relating to the nature of the W3C process as well as the role of the consortium as an institution of internet governance.

From a theoretical perspective, the findings of this research have highlighted the vital importance of deliberative framing as a form of coercive power within deliberative fora. Specifically, the findings showed how despite the apparent inclusion of a diverse range of actors and discourses within the discussions, repeated attempts to frame the W3C process as purely technical and coordinative acted to constrain the scope of the

discussions and in the process limit the range of deliberative outcomes that were considered possible. As such, the findings of this research contribute to an emerging body of literature within deliberative democratic theory which emphasises the need to consider the ways in which framing effects can introduce discursive distortions and bias into deliberative processes (Barisione, 2010, 2012).

From a more practical perspective, the findings of this research highlight several procedural deficits which the W3C must address if it is to preside over the development of techno-policy standards legitimately.

Firstly, although the W3C should be commended for what the analysis revealed to be relatively high levels of input legitimacy, some concerns regarding inclusivity and transparency nonetheless remain. In relation to transparency, critics raised concerns about the opaque nature of the work of the W3C's Advisory Committee, and specifically the failure of the W3C to publicly release a record of the votes cast by W3C members in response to the EFF's formal appeal. The W3C justified its decision not to publish a record of individual votes on the basis of member confidentiality. However, given the exceptional nature of the appeal vote – it was the first vote taken on a specification in the W3C's history - as well as the public interest surrounding EME, it would not have seemed unreasonable for an organisation that claims to be open, to have introduced a policy that would have allowed for a public voting record to have been published.

In addition to concerns regarding transparency, the analysis of the process also raised concerns about the underrepresentation of women and participants from non-western countries. Although the underrepresentation of these groups is not uncommon within internet standards bodies or the ICT sector more generally, it was nonetheless felt that an organisation that purports to represent the interests of *all* web users should be doing more to encourage a process that is representative of the web's diverse and global user community.

In January 2018, W3C Advisory Board member and co-chair of the W3C Web Platform Working Group Léonie Watson launched the W3C Women Community Group. The stated mission of the group was to increase the presence of women in standards development, by providing 'a space to share experiences and information'; producing 'best practices and use case documents'; and advising the Advisory Board and Advisory Committee about 'potential enhancements to [the W3C] working environment to better support inclusion and diversity' (W3C, 2018). In November 2018, the group was renamed the Inclusion and Diversity Community Group and the scope of its mission statement broadened to include the promotion of *all* under-represented groups within the W3C. Although community groups do not have any official status within the W3C, these developments are nevertheless encouraging and demonstrate an awareness of the problem of diversity among W3C members.

Secondly, although the W3C has recently demonstrated a greater awareness of the social and political implications of its work, persistent attempts by some members to portray the consortium as a purely technical and coordinative body indicated a fundamental misunderstanding of the wider role that the W3C plays as an institution of internet governance. Given the limiting effects that such deliberative frames had on the process, it is suggested that participants and working group chairs would benefit greatly from much clearer guidance on how non-technical issues should be expressed and addressed within working group discussions. This work should form part of broader efforts by the W3C and its members to reflect upon and clarify the consortium's values and mission statement and to consider how these should be interpreted in relation to the policy issues affected by its work.

Finally, analysis of the mailing list discussions revealed widespread concern about the W3C's procedural capacity to manage public policy discussions. Although many participants were not necessarily opposed to addressing broader social and political questions as part of the consortium's work, some nonetheless questioned the ability of the

W3C to do so effectively without jeopardising its procedural efficiency or responsiveness to market demands. Such concerns were expressed most prominently in the context of discussions of user rights and content protection. At the time of EME's initial development, the consortium had little previous experience of dealing with these kinds of policy issues; a factor which undoubtedly contributed to participants' concerns about procedural efficiency. Intriguingly, the policy issues which the W3C had much greater experience of handling (accessibility, interoperability, security) performed comparatively well in the analysis. As such, in attempting to consider how the W3C might better accommodate discussions of user rights and content protection, it is important to see what lessons can be learned from the discussions of the other policy issues studied.

Firstly, analysis of the mailing list data revealed that discussions of accessibility, interoperability and security were supported by the on-going work of a wide range of specialist working groups and domains designed specifically to provide expert feedback and advice on the technical and policy implications of proposals. By contrast, no such working groups existed for the consideration of policy issues related to user rights or content protection. The restricted media community group² - created by opponents of the specification to assess alternative solutions to members' content protection requirements - provided a useful forum for some of the more productive discussions on these topics. However, unlike initiatives such as the Technical Architecture Group (TAG) or the Web Accessibility Initiative (WAI), which are empowered by the W3C process document to develop official guidelines and assist in the resolution of technical issues, as a "community group" restricted-media had no official status as part of the W3C process and so was unable to exert any significant influence over the development of EME.

The lack of established procedures for dealing with issues related to content protection and user rights meant that discussions were often characterised by uncertainty regarding

² Information regarding the restricted media group including its charter and activities can be found at: <https://www.w3.org/community/restrictedmedia/>

how these issues should be interpreted in relation to the W3C's values and mission. Participants also expressed uncertainty about the roles and responsibilities of the working group chairs in the resolution of concerns and most crucially whether discussions of these issues should be considered as 'in-scope' for the mailing lists. Uncertainty on these matters prompted heated but largely unproductive discussions about the nature of W3C's process and so significantly contributed to the protracted and fractious nature of the deliberations overall.

In order to provide greater clarity about the ways in which user rights concerns can be identified and addressed, it is recommended that the W3C charter a Policy Advisory Group to establish policies and procedures for developing standards which have public policy implications. In 2016, W3C member Jean-François Abramatic submitted a proposal for the creation of a similar group. The Technology and Policy Group (techpolig), as it would have been known, was intended to 'explore issues at the intersection of technology and policy-making'. According to its proposed charter (W3C, 2016c), the group would have functioned as 'a forum for W3C members to analyse technical considerations that the W3C sees as relevant to policies and governance decisions... [and] to reach consensus on descriptions of varying views of those considerations'. The proposal was rejected by the Advisory Committee in September 2016 following concerns that such an Interest Group would be a recipe for 'an ineffectual and frustrating talking-shop' (Doctorow, 2016c). Among the proposal's critics, were digital rights activist Cory Doctorow (2016c), who noted that 'members who wish to scuttle an IG project need only sit out its discussion, then declare their objections to its conclusions, and thus take them off the table'. As a result, Doctorow (2016b) observed how the proposal's participation framework was likely to 'yield dead-on-arrival policy recommendations' that could be easily ignored or denied by members who simply abstained from the group's work.

To avoid these issues, here it is suggested that the Policy Advisory Group be modelled on the successful TAG, which currently develops guidelines and recommendations on

technical matters for the Advisory Committee and Working Groups. Members of the Group would be elected from the W3C's membership; the Group would meet regularly and take up items suggested by its members and by relevant Working Groups and Interest Groups. By mimicking the structure of TAG, the group would be empowered to make policy recommendations and place items on the agenda at meetings of Working Groups and the Advisory Committee. As such, although it would not have the power to set policy, it would be able to ensure that policy questions were properly considered and framed in accordance with the consortium's stated principles and mission.

An initial priority for the Advisory Group should be the clarification of the consortiums policies in relation to online copyright and content protection and the development of procedures for handling standards which impinge upon users' fair use rights. As EFF Senior Staff Technologist Seth Schoen (2013) observed, 'the W3C needs to develop a policy regarding DRM and similar proposals, or risk having its own work and the future of the Web become buried in the demands of businesses that would rather it never existed in the first place'.

Finally, although discussions of security and accessibility benefitted from the contributions of a range of experts, with a few notable exceptions³, discussions of user rights and content protection lacked any substantive participant from policy experts or lawyers with expertise in the areas of copyright and fair use. In some instances, this lack of expertise led to uncertainty over the potential legal implications of the specification's implementation, including for example, whether or not security researchers who chose to circumvent the EME encryption would be liable for prosecution. As such, it is recommended that the W3C make greater use of its invited expert policy to encourage the

³ W3C Strategy Lead and Policy Counsel Wendy Seltzer acted as the chair of the restricted-media community group during the development of EME. As an American attorney with extensive experience of intellectual property and technology law, her contributions to the discussions were invaluable and helped to clarify many of the legal questions related to the implementation of EME.

participation of a broader range of individuals including those with legal and policy expertise and professional experience in the areas of intellectual property and copyright.

The recommendations outlined above should help the W3C to address some of the procedural deficiencies identified during the analysis of its development of EME. However, the competitive nature of the market for ICT standards means that the consortium's willingness and capacity to actively pursue due process and ensure procedural rigour will inevitably always be weighed against its need to satisfy the technical demands of a marketplace increasingly dominated by a handful of powerful companies, without whose compliance and financial support, the W3C would effectively be obsolete.

For the past thirty years, responsibility for striking a balance between the W3C's substantive and procedural claims to legitimacy has lain almost entirely with the 'benevolent dictator' of the web, Tim-Berners Lee. Through his strategic use of soft power and sincere engagement with a broad range of stakeholders, Berners-Lee has largely succeeded in ensuring conformity to open web principles and safeguarding his original vision of a universal web accessible to all. However, as commercial pressures on standards bodies have increased and influence over the web standards marketplace has become progressively more centralised in the hands of a few powerful corporate actors, it is clear that the consortium's capacity and willingness to constrain the monopolising tendencies of the market has gradually diminished.

At no point has the impotence of the W3C been better illustrated than during the development of EME, where, despite the reservations of staff members (including Berners-Lee himself) and widespread grassroots opposition to content protection, the consortium was seen to be ultimately powerless to prevent the development of the specification. As Tim Berners-Lee (2017) reflected,

'W3C does not have any power to forbid anything... W3C is not the US Congress, or WIPO, or a court... W3C is a place for people to talk, and forge consensus over great new technology for the web. Yes, there is an argument made that in any case, W3C should just stand up against DRM, but we, like Canute, understand our power is limited.'⁴

In the context of an increasingly fast-paced and commercially orientated standards environment, it is clear that many participants believe that the W3C must learn to pick its battles and to use the influence that it still retains to carefully and strategically to achieve its goal of protecting the open web. Clearly, in the case of EME, the calculation of many within the W3C was that given the apparent inevitability of content protection online, opposition to the specification would be unlikely to achieve any substantive or lasting benefits.

Given the widespread support for EME from several important browser vendors, such a position may not have been unreasonable. However, as the gradual commercial enclosure of web standardisation continues, it nevertheless becomes increasingly difficult to envision a situation in which a principled stance taken by the W3C in opposition to a well-supported web technology would be sufficient to prevent its development.

To the extent that such a circumstance *is* still possible, the power of the W3C to exert significant influence over the standards it develops will almost certainly depend on the consortium's continued ability to command the respect and admiration of the broader internet community. For the past quarter of a century, the reputation of the W3C as a trusted custodian of the open web has been carefully nurtured by Tim Berners-Lee and W3C staff through their unquestionable commitment to the long-term development of the open web as well as their openness and responsiveness to the interests and opinions of the ICT community. As a result of the controversy over EME, and in particular the

⁴ Tim Berners-Lee's refusal to 'play the role of Canute' was ridiculed and criticised by opponents of EME who saw the Director's acceptance of the inevitability of DRM as defeatist (McCarthy, 2017).

perceived failure of the W3C to adequately consider the policy concerns of its members and the public, this reputation has over the past five years suffered serious and potentially lasting damage as many influential stakeholders, including the EFF, have begun to publicly express doubts about the competence of the consortium and its capacity to represent the interests of end users (Doctorow, 2017).

Thus, whilst some members may continue to lament the impotency of the W3C's to resist corporate violations of its values, here I argued that it is only through genuine acknowledgement and consideration of the broader social and political implications of its work that the W3C can begin to rebuild its reputation, and thus rediscover the 'moral authority' needed to fulfil its mission of 'leading the web to its full potential'. Without it, the W3C is destined to find itself increasingly at the mercy of market forces, and thus, like Canute, powerless to defend its values against a tide of corporate enclosure that, in time, may threaten not only the W3C but also perhaps the freedom and openness of the web itself.

Annex A: List of key words

Word	Count	Weighted Percentage (%)	Similar Words
users'	460	1.15	user, users, users', users'
standards	444	1.11	standard, standardization, standardize, standardized, standardizing, standards
content	328	0.82	content
media	303	0.76	media
works	286	0.71	work, worked, working, works
rights	248	0.62	right, rights
browser	248	0.62	browser, browsers
videos	246	0.61	video, videos
open	232	0.58	open, opened, openers, opening, openly, openness
accessibility	229	0.57	access, accessed, accessibility, accessible, accessing
security	216	0.54	secure, security
digital	205	0.51	digital
members	195	0.49	member, members, members'
copyright	183	0.46	copyright, copyrighted, copyrights
control	175	0.44	control, controlled, controller, controlling, controls
group	169	0.42	group, groups
technology	167	0.42	technological, technologies, technology
free	166	0.41	free, frees
restrictions	160	0.40	restrict, restricted, restricting, restriction, restrictions, restrictive, restricts
designed	155	0.39	design, designed, designing
protections	155	0.39	protect, protected, protecting, protection, protections, protects
html	152	0.38	#html, html
software	151	0.38	software
extensions	146	0.36	extension, extensions
defects	144	0.36	defect, defective, defects
companies	135	0.34	companies, company
specification	133	0.33	specific, specifically, specification, specifications
encrypted	127	0.32	encrypted, encryption
berners	124	0.31	berners
world	123	0.31	world
legal	113	0.28	legal, legalities, legality, legally
proposal	112	0.28	proposal, proposals, propose, proposed, proposes
license	109	0.27	license, licensed, licenses, licensing
create	108	0.27	create, created, creates, creating
interoperability	107	0.27	interoperability, interoperable, interoperate, interoperates, interoperating

researchers	105	0.26	research, researcher, researchers
computer	95	0.24	computer, computers, computing
campaign	90	0.22	campaign, campaigns
laws	88	0.22	lawful, lawfully, laws
netflix	87	0.22	netflix
consortium	85	0.21	consortium
decision	81	0.20	decision, decisions, decisively
https	80	0.20	https
privacy	80	0.20	privacy
blogs	77	0.19	blog, blogs
publicly	76	0.19	public, publication, publicity, publicly
platform	74	0.18	platform, platforms
source	74	0.18	source, sources
devices	73	0.18	device, devices
internet	72	0.18	internet
proprietary	71	0.18	proprietary
business	70	0.17	business, businesses
process	69	0.17	process, processes, processing
html5	67	0.17	html5
foundation	65	0.16	foundation
publishers	64	0.16	publish, published, publishers, publishing
products	63	0.16	product, production, productions, products
lock	61	0.15	lock, locked, locking, locks
plug	61	0.15	plug, plugging
movie	60	0.15	movie, movies
streaming	60	0.15	stream, streamed, streaming, streams
dmca	58	0.14	dmca
innovators	57	0.14	innovate, innovation, innovations, innovative, innovators
microsoft	57	0.14	microsoft
mozilla	57	0.14	mozilla
technical	56	0.14	technical, technically
updates	56	0.14	update, updated, updates
appeal	56	0.14	appeal, appealed, appeals
commission	55	0.14	commission
deeplinks	54	0.13	deeplinks
freedom	54	0.13	freedom, freedoms
google	53	0.13	google
owners	53	0.13	owner, owners
universal	53	0.13	universal, universality, universe, universities, university
online	50	0.12	online
usage	50	0.12	usage
european	49	0.12	european
plugins	49	0.12	plugin, plugins

possibly	49	0.12	possibilities, possibility, possible, possibly
corporations	47	0.12	corporate, corporation, corporations
1201	45	0.11	1201
controversial	45	0.11	controversial, controversy
fairness	44	0.11	fair, fairness
hollywood	44	0.11	hollywood
competition	44	0.11	competition, competitive
market	43	0.11	market, markets
covenant	41	0.10	covenant, covenants
disabilities	41	0.10	disabilities, disability, disable, disabled
share	41	0.10	share, shared, shares, sharing
vendors	41	0.10	vendor, vendors
permission	41	0.10	permission, permissions, permissive
#dayagainstdrm	40	0.10	#dayagainstdrm, dayagainstdrm
vote	39	0.10	vote, votes, voting
principles	38	0.09	principle, principled, principles
decryption	37	0.09	decryption
bypassing	36	0.09	bypass, bypassed, bypassing
director	36	0.09	director
everyone	36	0.09	everyone
membership	36	0.09	membership

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