Notes on networking standards and politics
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Abstract

   The IETF cannot ordain what standards or protocols are to be used on
   networks, but the standards development process in the IETF does have
   an impact on society through its normative standards setting process.
   Among other things, the IETF's work affects what is perceived as
   technologically possible and useful where networking technologies are
   being deployed, and its standards reflect what is considered by the
   technical community to be feasible and good practice. Whereas there
   might not be agreement among the Internet protocol community on the
   specific political nature of the technological development process
   and its outputs, it is undisputed that standards and protocols are
   both products of a political process, and they can also be used for
   political means.

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   This Internet-Draft will expire on November 18, 2019.

Table of Contents

[1](#). **Introduction**

   "Science and technology lie at the heart of social asymmetry.
      Thus technology both creates systems which close off other
      options and generate novel, unpredictable and indeed
      previously unthinkable, option. The game of technology is
      never finished, and its ramifications are endless."

                            - Michel Callon

   "The Internet isn't value-neutral, and neither is the IETF."

                      -{{[RFC3935](#)}}

The design of the Internet through protocols and standards is a
technical issue with great political and economic impacts [RFC0613].
The early Internet community already realized that it needed to make
decisions on political issues such as intellectual property;
internationalization [BramanI]; diversity; access [RFC0101]; privacy
and security [RFC0049]; and the military [RFC0164] [RFC0316],
governmental [RFC0144] [RFC0286] [RFC0313] [RFC0542] [RFC0549] and
non-governmental [RFC0196] uses of the network. This has been
clearly pointed out by Braman [BramanII].

Recently there has been increased discussion in the IRTF and IETF on
the relation between Internet protocols and human rights [RFC8280],
which spurred discussion of the value neutrality and political nature
of standards. The network infrastructure is on the one hand
designed, described, developed, standardized and implemented by the
Internet community, while on the other hand the Internet community
and Internet users are also shaped by the affordances of the
technology. Companies, citizens, governments, standards development
bodies, public opinion and public interest groups all play a part in
these discussions. In this document we aim to outline different
views on the relation between standards and politics, and seek to
answer the question of whether standards are political, and if so,
how.

2. Vocabulary Used

Politics (from Greek: Politika: Politika, definition "affairs of the
   commons") is the process of making decisions applying to all
   members of a diverse group with conflicting interests. More
   narrowly, it refers to achieving and exercising positions of
   governance or organized control over a community. Furthermore,
   politics is the study or practice of the distribution of power and
   resources within a given community as well as the
   interrelationship(s) between communities. (adapted from
   [HagueHarrop])

Affordances The possibilities that are provided to an actor through
   the ordering of an environment by a technology. This means that a
   technology does not determine what is possible, but that it that
   invites specific kinds of behavior, and in that process shapes it.

3. Research Question

Are protocols political?

4. **Technology and Politics: a review of literature and community
    positions**

   In 1993 the Computer Professionals for Social Responsibility stated
   that 'the Internet should meet public interest objectives'.
   Similarly, [RFC3935] states that 'The Internet isn't value-neutral,
   and neither is the IETF.'. Ethics and the Internet was already a
   topic of an RFC by the IAB in 1989 [RFC1097]. Nonetheless there has
   been a recent uptick in discussions within the IETF and IRTF about
   the impact of Internet protocols on human rights [RFC8280], and more
   generally in public debate about the impact of technology on society.

   This document aims to provide an overview of the spectrum of
   different positions that have been observed in the IETF and IRTF
   community, and have been observed during interviews, mailinglist
   exchanges, and during research group sessions. These positions were
   observed during participatory observation, through 39 interviews with
   members of the community, the Human Rights Protocol Considerations
   Research Group mailing list, and during and after the Technical
   Plenary on Protocols and Human Rights during IETF98.

   Without judging them on their internal or external consistency they
   are represented here. Where possible we also sought to engage with
   the academic literature on this topic.

4.1. **Technology is value neutral**

   This position starts from the premise that the technical and
   political are differentiated fields and that technology is 'value
   free'. This is also put more explicitly by Carey: "electronics is
   neither the arrival of apocalypse nor the dispensation of grace.
   Technology is technology; it is a means for communication and
   transportation over space, and nothing more." [Carey]. In this view
   protocols only become political when it is actually being used by
   humans. So the technology itself is not political, the use of the
   technology is. This view sees technology as instrument;
   "technologies are 'tools' standing ready to serve the purposes of
   their users. Technology is deemed 'neutral,' without valuative
   content of its own.'" [Feenberg]. Feenberg continues: "technology is
   not inherently good or bad, and can be used to whatever political or
   social ends desired by the person or institution in control.
   Technology is a 'rational entity' and universally applicable. One
   may make exceptions on moral grounds, but one must also understand
   that the "price for the achievement of environmental, ethical, or
   religious goals...is reduced efficiency." [Feenberg].

4.2. Some protocols are political sometimes

   This stance is a pragmatic approach to the problem. It states that
   some protocols under certain conditions can themselves have a
   political dimension. This is different from the claim that a
   protocol might sometimes be used in a political way; that view is
   consistent with the idea of the technology being neutral (for the
   human action using the technology is where the politics lies).
   Instead, this position requires that each protocol and use be
   evaluated for its political dimension, in order to understand the
   extent to which it is political.

4.3. All protocols are political sometimes

   While not an absolutist standpoint it recognizes that all design
   decisions are subject to the law of unintended consequences. The
   system consisting of the Internet and its users is vastly too complex
   to be predictable; it is chaotic in nature; its emergent properties
   cannot be predicted. This concept strongly hinges on the general
   purpose aspect of information technology and its malleability.
   Whereas not all (potential) behaviours, affordances and impacts of
   protocols can possible be predicted, one could at least consider the
   impact of proposed implementations.

4.4. The network has its own logic and values

   While humans create technologies, this does not mean that they are
   forever under human control. A technology, once created, has its own
   logic that is independent of the human actors that either create or
   use the technology.

   From this perspective, technologies can shape the world. As Martin
   Heidegger says, "The hydroelectric plant is not built into the Rhine
   River as was the old wooden bridge that joined bank with bank for
   hundreds of years. Rather the river is dammed up into the power
   plant. What the river is now, namely, a water power supplier,
   derives from out of the essence of the power station." [Heidegger]
   (p 16) The dam in the river changes the world in a way the bridge
   does not, because the dam alters the nature of the river.

   In the same way - in another and more recent example - the very
   existence of automobiles imposes physical forms on the world
   different from those that come from the electric tram or the horse-
   cart. The logic of the automobile means speed and the rapid covering
   of distance, which encourages suburban development and a tendency
   toward conurbation. But even if that did not happen, widespread
   automobile use requires paved roads, and parking lots and structures.

These are pressures that come from the automotive technology itself,
and would not arise without that technology.

In much same way, then, networking technology, such as protocols,
creates its own demands. One of the most important conditions for a
protocol's success is its incremental deployability [RFC5218]. This
means that the network already contains constraints on what can be
deployed into it. In this sense the network creates its own paths,
but also has its own objective. According to this view the goal of
the network is interconnection and connectivity; more connectivity is
good for the network. Proponents of this positions also often
describe the Internet as an organism with its own unique ecosystem.

In this position it is not necessarily clear where the 'social' ends
and the 'technical' begins, and it could be argued that the
distinction itself is a social construction [BijkerLaw] or that a
real-life distinction between the two is hard to make [Bloor].

4.5. Protocols are inherently political

This position argues the opposite of 'technological neutrality'.
This position is illustrated by Postman when he writes: "the uses
made of technology are largely determined by the structure of the
technology itself" [Postman]. He states that the medium itself
"contains an ideological bias". He continues to argue that
technology is non-neutral:

(1) because of the symbolic forms in which information is encoded,
different media have different intellectual and emotional biases;

(2) because of the accessibility and speed of their information,
different media have different political biases;

(3) because of their physical form, different media have different
sensory biases;

(4) because of the conditions in which we attend to them, different
media have different social biases;

(5) because of their technical and economic structure, different
media have different content biases.

Recent scholars of Internet infrastructure and governance have also
pointed out that Internet processes and standards have become part
and parcel of political processes and public policies. Several
concrete examples are found within this approach, for instance, the
IANA transition or global innovation policy [DeNardis]. The Raven
process in which the IETF refused to standardize wiretapping - which

resulted in [RFC2804] - was an instance where an international
governance body took a position that was largely political, although
driven by a technical argument. The process that led to [RFC6973] is
similar: the Snowden disclosures, which occured in the political
space, engendered the IETF to act. This is summarized in [Abbate]
who says: "protocols are politics by other means," emphasizing the
interests that are at play in the process of designing standards.

This position further holds that protocols can never be understood
without their contextual embeddedness: protocols do not exist solely
by themselves but always are to be understood in a more complex
context - the stack, hardware, or nation-state interests and their
impact on civil rights. Finally, this view is that protocols are
political because they influence the socio-technical workings of
reality and society. The latter observation leads Winner to conclude
that the reality of technological progress has too often been a
scenario where innovation has dictated change for society. Those who
had the power to introduce a new technology also had the power to
create a consumer class to use the technology "with new practices,
relationships, and identities supplanting the old, -- and those who
had the wherewithal to implement new technologies often molded
society to match the needs of emerging technologies and
organizations." [Winner].

5. IETF: Protocols as Standards

In the previous section we gave an overview of the different existing
positions of the impact of Internet protocols in the Internet
protocol community. In the following section we will review the
standards setting process and its consequences for the politics of
protocols, through the lens of existing literature on standards
setting.

Standards enabling interoperating networks, what we think of today as
the Internet, were created as open, formal and voluntary standards.
A platform for Internet standardization, the Internet Engineering
Task Force (IETF), was created in 1986 to enable the continuation of
such standardization work. The IETF has sought to make the standards
process transparent (by ensuring everyone can access standards,
mailing-lists and meetings), predictable (by having clear procedures
and reviews) and of high quality (by having draft documents reviewed
by experts from its own community). This is all aimed at increasing
the accountability of the process and the quality of the standard.

The IETF implements what has been referred to as an "informal ex ante
disclosure policy" for patents [Contreras], which includes the
possibility for participants to disclose the existence of a patent
relevant for the standard, royalty-terms which would apply to the

implementers of that standard should it enter into effect, as well as
other licensing terms that may be interesting for implementers to
know. The community ethos in the IETF seems to lead to 100% royalty-
free disclosures of prior patents which is a record number, even
among other comparable standard organizations [Contreras]. In the
following paragraph we will describe inherent tensions in the
standards process.

5.1. Competition and collaboration

Standards exist for nearly everything: processes, technologies,
safety, hiring, elections, and training. Standards provide blue-
prints for how to accomplish a particular task in a similar way for
others that are trying to accomplish the same thing, while reducing
overhead and inefficiencies. Although there are different types and
configurations of standards, they all enhance competition by allowing
different entities to work from a commonly accepted baseline.

On the first types of standards than can be found are "informal" ones
- agreed-upon normal ways of interacting within a specific community.
For example, the process through which greetings to a new
acquaintance are expressed through a bow, a handshake or a kiss. On
the other hand, "formal" standards are normally codified in writing.

Within economy studies, _de facto_ standards arise in market
situations where one entity is particularly dominant; downstream
competitors are therefore tied to the dominant entity's technological
solutions [Ahlborn]. Under EU anti-trust law, _de facto_ standards
have been found to restrict competition for downstream services in PC
software products [CJEU2007], as well as downstream services
dependent on health information [CJEU2004].

Even in international law, the World Trade Organization (WTO) uses
standards, although it recognizes a difference between standards and
technical regulations. The former are voluntary formal codes to
which products or services may conform, while technical regulations
are mandatory requirements to be fullfilled for a product to be
accessible in a national market. These rules have implications for
how nation states bound by WTO agreements can impose specific
technical requirements on companies. Nonetheless, there are many
standardization groups that were originally launched by nation states
or groups of nation states. ISO, BIS, CNIS, NIST, ABNT and ETSI are
examples of institutions that are, wholly or partially, sponsored by
public money in order to ensure the smooth development of formal
standards. Even if under WTO rules these organizations cannot create
the equivalent of a technical regulation, they have important
normative functions in their respective countries. No matter what
form, all standards enhance competition and collaboration because

they define a common approach to a problem. This potentially allows
different instances to interoperate or be evaluated according to the
same indicators.

The development of formal standards faces a number of economic and
organizational challenges. Mainly, the cost and difficulty of
organizing many entities around a mutual goal, as well as the cost of
research and development leading up to a mutually beneficial
technological platform. In addition, deciding what the mutual goal
is can also be a problem. These challenges may be described as
inter-organizational costs. Even after a goal is decided upon,
coordination of multiple entities requires time and money. One needs
communication platforms, processes and a commitment to mutual
investment in a higher good. They are not simple tasks, and the more
different communities are affected by a particular standardization
process, the more difficult the organizational challenges become.

5.2. How voluntary are open standards?

Coordinating transnational stakeholders in a process of negotiation
and agreement through the development of common rules is a form of
global governance [Nadvi]. Standards are among the mechanisms by
which this governance is achieved. Conformance to certain standards
is often a basic condition of participation in international trade
and communication, so there are strong economic and political
incentives to conform, even in the absence of legal requirements
[Russell]. [RogersEden] argue:

"As unequal participants compete to define standards, technological
compromises emerge, which add complexity to standards. For instance,
when working group participants propose competing solutions, it may
be easier for them to agree on a standard that combines all the
proposals rather than choosing any single proposal. This shifts the
responsibility for selecting a solution onto those who implement the
standard, which can lead to complex implementations that may not be
interoperable. On its face this appears to be a failure of the
standardization process, but this outcome may benefit certain
participants - for example, by allowing an implementer with large
market share to establish a _de facto_ standard within the scope of
the documented standard."

6. Conclusion

Economics, competition, collaboration, openness, and political impact
have been an inherent part of the work of the IETF since its early
beginnings. The IETF cannot ordain which standards are to be used on
the networks, and it specifically does not determine the laws of
regions or countries where networks are being used, but it does set

open standards for interoperability on the Internet, and has done so
since the inception of the Internet. Because a standard is the blue-
print for how to accomplish a particular task, the adopted standards
have a normative effect. The standardization work at the IETF has
direct implications on what is perceived as technologically possible
and useful where networking technologies are being deployed, and thus
its standards reflect what is considered by the technical community
as feasible and good practice.

Whereas there might not be agreement among the Internet protocol
community on the specific political nature of the technological
development process and its outputs, it is undisputed that standards
and protocols are both products of a political process, and they can
also be used for political means. Therefore protocols and standards
are not 'value-neutral, and neither is the IETF' [RFC3935]. Thus we
can answer the research question 'are protocols political' in
affirmative fashion.

Further research could explore how the political nature of protocols
can be taken into account in the standards development process in
order to (1) to minimize negative unintended social consequences, (2)
ensure clear understanding of the intended consequences, (3) maintain
importance of the IETF as open standards body that facilitates global
interoperability.

7. Security Considerations

As this draft concerns a research document, there are no security
considerations as described in [RFC3552], which does not mean that
not addressing the issues brought up in this draft will not impact
the security of end-users or operators.

8. IANA Considerations

This document has no actions for IANA.

9. Acknowledgements

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contributions.

10. Research Group Information

   The discussion list for the IRTF Human Rights Protocol Considerations
   working group is located at the e-mail address hrpc@ietf.org [1].
   Information on the group and information on how to subscribe to the
   list is at: https://www.irtf.org/mailman/listinfo/hrpc [2]

   Archives of the list can be found at: https://www.irtf.org/mail-
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11.2. URIs

   [1] mailto:hrpc@ietf.org

   [2] https://www.irtf.org/mailman/listinfo/hrpc

   [3] https://www.irtf.org/mail-archive/web/hrpc/current/index.html

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