New Technology, Minorities and Internet Governance

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Digitization and convergence of media do affect minorities, not only at the content layer but at the level of technical and political governance of media. This is true for traditional media, e.g. television, as well as the Internet. On the Internet, much is taking place without any government involvement at all, with new gatekeepers and individual actors outside the scope of regulation and only some relevant national legislation. The Internet as we know it today, is not the result of a force of nature, nor the logical consequence of technological necessities. It has been shaped by technical progress, but also by the decisions of software engineers, lawmakers and company executives. Even purely technical decisions might have unintended consequences and need to be raised from an engineering discourse to a policy level. Internet governance is an inclusive approach to regulation and should include minority issues, as well. This article explores current technical developments and their possible consequences on minority media in three exemplary fields of media (digital terrestrial television, the Domain Name System and Social Media). Minority media run the risk of being presented with a *fait accompli* if the debate is not broadened into the seemingly unrelated technical details of media governance.

Keywords: minority media; digitization; Web 2.0; social media; Internet governance

Whereas traditional discourses on minority media often focus on representation of minorities in the media, access to media production and diversity in the media, the technical aspects of digital media and media governance have yet to feature prominently in relevant discourses.

To participate in this new discourse, a profound understanding of the technical functioning of new media and the way it is shaping the reality of media is necessary. This involves technical jargon as well as physical phenomena in the world of bits, bytes and bauds. However, understanding digitization and the underlying infrastructure and technology that builds the Internet is crucial, because they have a direct effect on the reality of media as we see it today. Minority media run the risk of

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being presented with a *fait accompli* if the debate is not broadened into the seemingly unrelated technical details of media governance.

Digitization and convergence of media do affect minorities, not only at the content level but at the level of technical and political governance of media. Traditionally, media regulators and legislators defined access to media for majorities and minorities alike, for example through the allocation of licences and frequencies, or minimum standards for the production of content in minority languages. Increasingly, though, e.g. in the absence of strict regulatory regimes on new media such as the Internet, the technical framework itself is defining how we can use and access media. Or, in other words, today it is not only the producers of content that shape the way media look, but also the engineers that create the infrastructure for media.

Already in 1999, in his groundbreaking work *Code and other Laws of Cyberspace*, Harvard professor Lawrence Lessig (1999) identified "code" as the regulating power of the digital age. This is not to suggest that traditional regulators – legislators, editors and media regulatory authorities – do not have a role to play in the future, but their role is becoming increasingly complex and involves more stakeholders: governments, civil society, industry and academia. On the other hand, many technical stakeholders are not aware of the particularities of media policy and content regulation, especially when it comes to vulnerable groups in society or minorities.

This article addresses the topic of minority issues and new media in three exemplary dimensions in order to lay out the problems and challenges for minorities and digital media:

    a) Digital Terrestrial Television (DTT)
    b) Internet Governance and Domain Names
    c) Social Media, Folksonomy and the Filter Bubble

The above list is not exhaustive and this article is meant to serve as a starting point for further debate, rather than a summary of discussions held. This is an exemplary snapshot of different media in the digital world that includes traditional media such as (a) television (TV), (b) the development of the Internet infrastructure as we see it today, and (c) future developments in social media and Web 2.0.
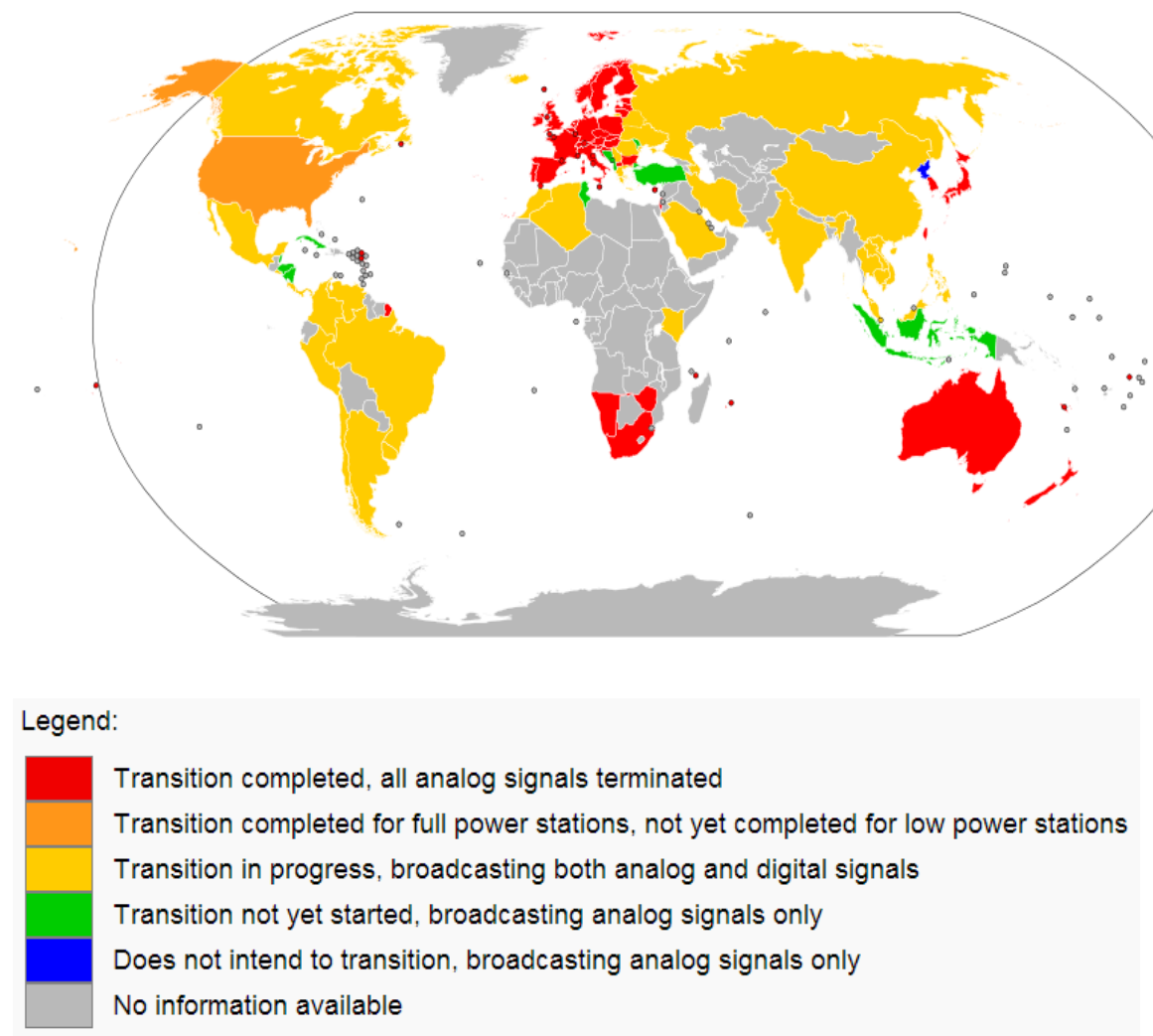
1. Digital terrestrial television (DTT)

The digital switch-over in TV broadcasting will change the media environment dramatically. With the advent of digital terrestrial broadcasting for both radio and television, the frequency usage changes: single national frequencies instead of local networks might be used to serve a whole territory. This also has an effect on regional media that now have to compete with their local majority provider and country-wide and national channels.

All over the world, television is transitioning from analogue to digital. In cable and satellite television, this process has been widely completed and does not have a negative effect on minority media. Quite the contrary, as digital broadcasting allows for more channels, more diversity and less expensive TV production.[1] When it comes to terrestrial broadcasting, though, (i.e. TV reception over the air, by antenna) there are some particularities that might have an effect on minority media.

The analogue switch off (ASO) of terrestrial television has already happened in many countries and is scheduled to take place in other countries over the coming years. The switchover from analogue to digital terrestrial television is one of the more complex and demanding challenges for societies both from a regulatory and technical point of view. In theory, digital terrestrial television leads to less scarcity of frequencies, more channels and thus more diversity. Practice shows, however, that the switchover to digital terrestrial television (DTT) tends to perpetuate existing monopolies and might disadvantage smaller and regional media outlets (Kovacs and Stone, 2010).

Traditionally, the frequency spectrum has been a scarce resource, governed and licensed by international and national bodies such as the International Telecommunication Union (ITU) or media regulatory authorities such as Ofcom (England), CSA[2] (France) or the FCC[3] (United States of America), to name but a few. Regulating the frequency spectrum has always been a highly complex issue, besides broadcasting also involving mobile radio communication for civilian or military use. DTT allows for more efficient use of this frequency spectrum. Where a frequency with a given bandwidth has previously allowed for only one TV channel, it is now possible to broadcast a number of channels, even in High Definition, over the same bandwidth using so-called "multiplexes".

Figure 1. World map of digital television transition in progress

Legend:

- **[red]** Transition completed, all analog signals terminated
- **[orange]** Transition completed for full power stations, not yet completed for low power stations
- **[yellow]** Transition in progress, broadcasting both analog and digital signals
- **[green]** Transition not yet started, broadcasting analog signals only
- **[blue]** Does not intend to transition, broadcasting analog signals only
- **[grey]** No information available

Source: *World map of digital television transition progress*. 31 December 2013. Wikicommons. http://en.wikipedia.org/wiki/File:Worldmap_digital_television_transition.svg

The bandwidth that has been freed by the switchover to digital broadcasting is called the digital dividend. In theory, this dividend, i.e. the freed space of the frequency spectrum, could be used for broadcasting again, thus allowing for more channels. In practice this space, or parts of it, is often auctioned off for mobile telephony use or 3G and 4G mobile Internet services.

While this shift in the use of frequencies from television to mobile telephony and data might have mid- and long-term benefits for Internet access in remote and rural areas, it also means that there is still no abundance of TV broadcasting frequencies in DTT. Generally, DTT broadcasting allows for 15 to 25 channels – considerably more than in analogue times, but not comparable to cable or satellite.

This means that especially in countries with a high DTT penetration – as opposed to satellite or cable – there is still competition for channels and multiplexes. At the same time, multiplex providers bundle television programmes and effectively act as a new intermediary between content and consumer. The question is whether multiplex providers should be required to host content from minority media providers, with must-carry obligations imposed upon them, and how media regulation should apply to those new intermediaries and gatekeepers.

One of the other advantages of using DTT is that the modulation of broadcasting over the air provides better quality and better usage of the frequency spectrum. Many forms of transmission, including the old analogue television broadcasts, would interfere with one another. Therefore, when planning a network, adjacent areas could not use the same frequencies and this greatly increased the amount of spectrum required to cover a country.

Using a technology called orthogonal frequency-division multiplexing (OFDM) as the form of modulation allows the network to implement what is termed a single frequency network. A single frequency network, or SFN, is one where a number of transmitters operate on the same frequency without causing interference.[4] A further advantage of using a system such as DVB-T[5] – that uses OFDM and allows for the implementation of an SFN – is that very small transmitters can be used to enhance local coverage.

SFNs, on the other hand, mean that if a single frequency is used for the whole country, this caters to national broadcasters instead of regional outlets with a limited geographical distribution. In analogue times, the same frequency could have been used by different TV stations with no geographical overlap. SFNs possibly disadvantage regional and local broadcasters. In Ukraine, for example, in 2009 there were a total of 13 national, 34 regional and 647 local broadcasters on the analogue terrestrial platform (Digitab, 2009). It was a challenge for regulators and technicians to guarantee the existence of smaller, non-mainstream media during the switchover from analogue to digital terrestrial TV in an over-saturated market as SFNs favour larger country-wide broadcasters. Local, regional and community media must be considered from the first stages of planning for the new frequency plan, e.g. by sharing frequencies. Additionally, issues of tariffs and access to multiplexes must be addressed, especially when it comes to regional and local TV broadcasters. Besides

technical knowledge, though, awareness should be raised at the policy level to address these issues well in advance and during the switchover process.

2. Internet governance and domain names

When it comes to the Internet, there is no scarcity of frequencies. However, the Internet is also shaped by technical and non-technical frameworks and regulators. Access to the Internet and bandwidth might be an issue ("digital divide"), as well as the Domain Name System (DNS) and other underlying technical structures.

We already mentioned that cyberspace has brought along a new regulator, in addition to politicians, editors and legislators: code. Or, as Lawrence Lessig wrote in 2000:

> This regulator is code – the software and hardware that make cyberspace as it is. 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. (Lessing, 2000)

The Internet as we know it today, is not the result of a force of nature, nor the logical consequence of technological necessities. It has been shaped by technical progress, but also by decisions of software engineers, lawmakers and company executives.

Again, this does not mean that states do not have a say when it comes to the Internet. Governments do have a role to play when it comes to Internet content and to protecting children, fighting racism, incitement to hatred and cybercrime. Governments should not limit themselves to refraining from interference in media activity, but rather they have a positive obligation to enable their citizens to access the Internet unhindered and free from restrictions. It is the obligation of democratic governments to implement legislation and regulation that allows for independent und pluralistic media, for the free flow of information, including across borders, unhindered access to the Internet, sufficient leeway for innovations in information technology and media freedom in the digital age (European Court of Human Rights, 2011; Mendel, n.d.; Lucchi, 2011).[6] A human right to Internet access is even being discussed at the level of the United Nations (UN General Assembly, 2011). Governments may take a variety of measures: overcoming state monopolies in

telecom and Internet providers, liberalizing the communications market, fostering Internet access in schools, libraries, public institutions as well as in homes, for example through free wireless networks (Möller and Amouroux, 2004).

If we take a look at China or Saudi Arabia, we can see manifestations of the Internet that only vaguely resemble what we take for granted online. Legal and technical practice in these countries shows that online censorship, blocking and filtering as well as controlling access is possible, even in decentralized networks such as the Internet. On the other hand, the fact that Facebook attracts more than a billion people worldwide is the result of technical programming and company decisions. Other, comparable social networks have not been as successful as Facebook, in part because of the programming that allows for a wide array of functionalities. It was technical innovations that made Google a synonym for Internet searches, and have allowed it to influence the way millions of people inform themselves every day, to name but a few examples.

Every technical or marketing decision by Internet companies has consequences with regard to how we experience the Internet. Even if implemented with the best intentions, every technical or software solution on the Internet might have (unwanted) side effects: filtering illegal content might also block legitimate websites (over-blocking), and new registration processes for Internet services might conflict with privacy concerns. This is even more important if the part of the population that is affected by these consequences is outside the mainstream and does not have a big lobby, as is the case with minorities.

Or, again in the words of Lawrence Lessig:

> 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. (Lessing, 2000)

The governance of Internet resources is becoming more complex, though, involving not only states, but all sectors of society: governments, civil society, industry and academia (Möller and Amouroux, 2007). Over the past decade since the World Summit on the Information Society (WSIS) in Geneva (2003) and Tunis (2005) the

concept of Internet governance evolved, describing an inclusive multi-stakeholder process. The definition of Internet governance by the UN Internet Governance Forum (IGF) accordingly addresses all stakeholders:

> Internet governance is the development and application by Governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet. (WGIG, 2005: 4)

Traditionally, regulation of the technical infrastructure of media was top-down, i.e. implemented by international institutions, such as the ITU, and national governments. This has been true for international telephone area codes and the frequency spectrum. The Internet, however, developed from the bottom up, without much interference by state regulators.

Instead of top-down regulation by governments, the early Internet worked on a consensual and pragmatic principle of 'rough consensus, running code' (Clark, 1992: 543). As long as something worked, it was fine. Changes and new ideas were tabled at the Internet Engineering Task Force (IETF) for discussion in so-called "Request for Comments" papers, or RFCs. The IETF and the Internet Society were the principal technical development and standards-setting bodies for the Internet. RFCs were a highly informal, and at the same time highly pragmatic, technical standard-setting procedure without government interference. Issues dealt with in these RFCs included, *inter alia*, the Domain Name System, which is also of relevance to minorities (see below).

The term "WWW" is often mistakenly used as a synonym for the Internet, but the Web is actually a service that operates over the Internet. Websites are identified by global identifiers called Uniform Resource Locators (URLs, e.g. www.theinformationsociety.org). Every web address, or URL, has a 12-digit number associated with it, which is translated by the DNS into a domain name. Domains are grouped underneath different top-level domains (TLDs) into generic and country TLDs. Whereas generic TLDs are connected to the type of content (gTLDs, e.g. .com, .gov, .edu, .org), country TLDs are linked to a specific geographic region (ccTLD, e.g. .de, .fr, .es) (Möller, 2007). ccTLDs are of course also of relevance to minorities.

The DNS was set up to regulate the Internet and make navigation on the Web easier for humans by replacing numbers with names, but it has also come to have policy effects, for example with regard to top-level domains. In the early days of the

Internet, the allocation of domain names was virtually a one-man show, run by Jon Postel (1943-1998) as the head of the Internet Assigned Numbers Authority (IANA). Since 1998, IANA has been part of the Internet Corporation for Assigned Names and Numbers (ICANN).

The first set of gTLDs, including .gov, .com or .edu, was assigned in 1984.[7] The creation and delegation of country code TLDs (ccTLDs) started in 1994 as laid out in RFC 1591.[8] RFC 1591 lays out the structure of the names in the Domain Name System (DNS), specifically the top-level domain names; and the administration of domains. It defines the Internet Assigned Numbers Authority (IANA) as the overall authority for the IP Addresses, Domain Names, and many other parameters used in the Internet. The day-to-day responsibility for assigning IP Addresses, and most top- and second-level Domain Names is delegated to regional registries. Jon Postel foresightedly stated in 1994 that 'IANA is not in the business of deciding what is and what is not a country'.[9] Instead, he chose to use the country codes corresponding to the International Organization for Standardization's ISO 3166-1 alpha-2 country codes.[10] In spite of this wise restraint by IANA, there is now a link between purely technical considerations (about the DNS) and political debate (which territory qualifies as a country). For example the TLD .cat was approved in 2005 for the region of Catalonia, intending to attend to the claims of the Catalan linguistic and cultural community on the Internet.[11] However, the campaign of "one TLD for our people" had begun back in 1996, after Jon Postel issued RFC 1591, and it took nearly a decade for .cat to be approved by ICANN.

First, the Catalonian Autonomous Government submitted a request to ISO to have "CT" for Catalonia included in the ISO 3166 list, trying to shortcut into IANA's TLD list via the ISO country codes. However, this request was rebuffed, as according to ISO Catalonia does not qualify as an independent country but rather as a region of Spain. The .ct advocates realized that it would be impossible to get official support from the Government of Spain for a separate country code, as that would be tantamount to accepting Catalonia as a separate nation-state. Instead, they focused on .cat as the international code for Catalan, following the ISO Standard $639 - 2$[12] for three-letter codes for human languages (Gerrand, 2006).

In March 2004 the *puntCAT* initiative submitted a formal application to ICANN for a .cat-sponsored TLD intended for the Catalan Linguistic and Cultural Community. In May 2004 ICANN Chairman Vint Cerf and ICANN Board Liaison

member John Klensin visited Barcelona and participated in a public meeting to discuss .cat. At first, ICANN was concerned that .cat would create a precedent for thousands of minority languages, all wanting a TLD. However, on 18 February 2005, ICANN voted in favour of .cat, and instructed their staff to negotiate a contract with the puntCAT Foundation (Gerrand, 2006). After consultations with the Spanish and Andorran governments ICANN made public its decision to approve the new .cat TLD in September 2005.[13] Registration of the first domains under the .cat TLD started in 2006.[14]

In a different, but similar, initiative beginning in 2006, a campaign called dot.CYM lobbied for the TLD .cym for usage concerning Wales (Welsh: Cymru) and Welsh culture. However, in 2010, after four years, the ccTLD .cym assigned to the Cayman Islands. The primary TLD used by the Cayman Islands is .ky, but the Islands also have the international three letter code, CYM, and ICANN's policy is that new applications for 3-letter domains will not be accepted if they match existing ISO 3-letter codes (The Independent, 2010). The dot.CYM campaign has since changed its request to ".cymru" gTLD instead (BBC, 2010).

The Welsh experience serves as a counterpoint to the Catalan success story: first, it took over a decade of continuous struggle before the TLD was adopted, second, .cat is not a "real" ccTLD for countries but rather a sponsored gTLD. Although ICANN's arguments and reluctance can be understood to some extent, the underlying question that remains is what kind of protection there should be for the development of media space for minorities that want to be affiliated through a dedicated TLD. Internationalized country code top-level domains, as made recently available by ICANN, might be a viable alternative for minorities and especially for non-Latin character-based languages (i.e. country or territory names in scripts other than US-ASCII characters).[15] Whether these domains are accepted beyond their target audience, however, remains to be seen.

3. Social media, folksonomy and the filter bubble

Increasingly it is argued that in a world of search engines and social networks, domain names become increasingly obsolete, as no one would be typing in such a name anymore, or it would not be typed into the browser's address bar but into Google's search field anyway (Williams, 2011). There is truth to this, obviously, but relying on search engines and social networks again brings with it issues for minority media.

The Internet is not run by governments, but mostly by private entities. As access to the Internet grows, private institutions hold growing control over audiences. A site such as Facebook can have profound consequences over how millions of individuals think about themselves and their peers. Google search algorithms cluster responses based on locality or on similar searches by others – among many more factors that define the individual "PageRank" of a given site. On Facebook, the "Edgeran" mechanism defines which content we see on our timeline.

In fact, it is one of the distinct attributes of the Web 2.0 that content is labelled and sorted by its users. Web 2.0 pioneer Tim O'Reilly accordingly speaks of 'folksonomy' (tagging) instead of 'taxonomy' (directories):

> The central principle behind the success of the giants born in the Web 1.0 era who have survived to lead the Web 2.0 era appears to be this, that they have embraced the power of the web to harness collective intelligence. […] Google's breakthrough in search, which quickly made it the undisputed search market leader, was PageRank, a method of using the link structure of the web rather than just the characteristics of documents to provide better search results. […] Amazon sells the same products as competitors such as Barnesandnoble.com, and they receive the same product descriptions, cover images, and editorial content from their vendors. But Amazon has made a science of user engagement. […] While a Barnesandnoble.com search is likely to lead with the company's own products, or sponsored results, Amazon always leads with 'most popular', a real-time computation based not only on sales but other factors that Amazon insiders call the 'flow' around products. (O'Reilly, 2005)

The question is whether this 'Wisdom of Crowds' (Surowiecki, 2005) of the Web 2.0 is not at the same time favouring mainstream content over minority or deviant content. This is not a problem – and in fact it contributed to the success of Google and the like – if the devious content is irrelevant. It becomes a problem, however, if the devious content is relevant but falls through the net.

While the Web is generally thought of as a globally equal place – where everyone gets the same responses to the same questions and equal access to the same information – social networks explicitly aim to individualize the Internet experience. Facebook calls this concept "Instant Personalization", Google talks about "Personalized Search".

For example, a search for the same term on Google from two different computers, from different locations, or while logged in to different Google accounts will produce different search results, depending on a number of factors that we do not

see and mostly do not even know. Moreover, although many of us use Facebook, there are no two identical "Facebooks" in the world. Of course, the blue logo with the white letters is always in the top-right corner and everyone has a timeline, but the content that we see on our timelines is highly individualized by our own "likes", and by Facebook's Edgerank algorithm. Depending on the number of friends we have and pages we like, our Timeline is more or less selective, with more posts displayed that get a lot of interaction, and less posts that were not so popular. Apparently, there are creaming effects built into Facebook's Edgerank algorithms. On the positive side, this allows for a pleasant user experience, as we only see things that are supposedly relevant, while on the negative side we might just get more mainstream content and less information from non-mainstream sources. Plus, many users might not be aware that Facebook is sorting content on their behalf.

Author Eli Pariser argues that we are already caught in a 'filter bubble' (Pariser, 2011). Instead of surfing the Web and discovering new and unheard of content, we tend to get more of the same – the same we have been looking for already, the same we already like, the same our friends are looking for.[16] Minority issues and fringe viewpoints thus run the risk of occupying an exponentially smaller public space, as minority content might be picked up less by search algorithms. Again, this is a mostly technical and mathematical issue, but with unintended and unclear consequences for the visibility of minority content on the Internet.

Putting things into perspective, there are of course many advantages and new possibilities that the Internet – and in particular private companies such as Google or Facebook – have to offer for citizens, including minorities (Moeller and Stone, 2013). Historically it has never been so easy to publish, in a professional manner, information or media-like content. The proverbial 'long tail' (Anderson, 2006) of the Web 2.0 also allows for niche content to find its audience and even be economically viable.

In 'We the Media' (Gillmor), 2004 notes that ordinary people suddenly have tools at hand that were reserved for centuries and decades to editorial offices, printing presses and broadcasting networks. As New York University Professor Jay Rosen puts it, referring to Dan Gillmor once more:

> The people formerly known as the audience are those who were on the receiving end of a media system that ran one way, in a broadcasting pattern, with high entry fees and a few firms competing to speak very loudly while the rest of the population listened in isolation from one

another – and who *today* are not in a situation like that *at all*. (Rosen, 2006)

If used wisely and proactively, social media and the Internet offer far more benefits to minorities, underserved parts of society or fringe viewpoints than there are possible dangers. And, as Rosen, Gillmor and others stated, one does not need to be a professional journalist. This does not mean that there is no need for professional journalism any more, but the Internet offers an array of features that are easy to use for effective communication:

> The coverage of important events by nonprofessional journalists is only part of the story. What also matters is the fact that people are having their say. This is one of the healthiest media developments in a long time. We are hearing new voices – not necessarily the voices of people who want to make a living by speaking out, but who want to say what they think and be heard, even if only by relatively few people. (Gillmor, 2004)

Research undertaken in 2013 suggests that 'Minorities rush to Twitter, Instagram, smartphones' (Pew Center, 2013a). Research by the Pew Research Center's Internet and American Life Project into demographics of users of social media by race and ethnicity attests to social media's accessibility, ubiquity and influence, regardless of cost and reach of broadband Internet. The Pew Center compiled a survey on the basis of phone interviews with 1,800 respondents in the US in November and December 2012. Results show, for example, that among black Internet users, 26% use Twitter, thus far outpacing whites (14%) and Hispanics (19%) (Pew Center, 2013b). This demonstrates that new media, Web 2.0 tools and social networks apparently offer great potential for minorities. However, this potential should be assessed systematically and examined in light of the challenges outlined in this article in order to make use of the benefits these technologies offer without (unintended) limitations by (careless) technical developments.

Conclusion

The new media environment offers new advantages. First, frequencies are no longer a scarce resource. Second, new media offers new expressive opportunities: traditional media operated in one direction, while new media operates in two, the audience being able to react to media outputs. Through Web 2.0 and social media everybody can use

the media, and entry barriers are very low. It creates remarkable potential in enabling communication on a very large scale.

At the same time, those vastly enhanced opportunities require serious consideration in terms of regulation and minority protection. There are technical complexities in the digital switchover, which pose new regulatory challenges. The next step of digital television might be "IPTV"[17] i.e. television over the Internet. Again, there is less scarcity of frequencies that allows for more channels, but together with a discussion on technical standards there needs to be political debate on non-discriminatory access to networks, platform neutrality, or must-carry obligations for service providers.

On the Internet, much is taking place without any government involvement at all, with new gatekeepers and individual actors outside the scope of regulation and only some relevant national legislation. Internet governance is an inclusive approach to regulation that should include minority issues as well. However, progress at the international level is slow and cumbersome.

Meanwhile, technical decisions of Internet and telecommunications companies are becoming increasingly important. Corporations and coders may make choices from purely technical considerations, and may simply not be aware of possible repercussions. These new actors in the media environment are simultaneously enablers and shapers of communication. Consequently, new media also touch upon other fundamental rights than the right to freedom of expression, such as the right to freedom of religion or the right to freedom of assembly online.

There are issues of legislative and corporate responsibility, and companies (Google, Facebook, Twitter etc.) display varying levels of it. Besides voluntary measures by information and communications technology companies to remove illegal and unwanted content, there could also be voluntary programmes to support or promote minority content, offer different language versions or empower minorities to use new media. Given the importance of the Internet, responsibilities over its regulation cannot be left to software engineers or the private sector alone. A multi-stakeholder approach, involving all actors (governments, civil society, industry and academia) in their respective capacity is needed.

Moreover, there are clearly challenges to the visibility of minorities in the context of new market forces. While the Internet provides new channels of expression for small groups, there is also a tendency towards globalization and homogenization.

While the media offers enhanced communication opportunities, this does not mean that communicative contact outside one's community indeed takes place. The reality is not only *one* large public sphere, but also smaller spheres that feed (or do not feed) into the broader debate. Moreover, active engagement often takes place between like-minded people and does not necessarily contribute to forging inter-community links. This can also give the impression that what the user searches for is prominent in the digital media when in reality that is not the case. This is a change in paradigm, as the debate will no longer revolve around content and airtime, but around visibility and findability as well.

Content, on the other hand, remains paramount. If content – regardless of whether it is minority or mainstream content – is considered relevant by users, if it is read, rated, recommended, shared and liked, it will also be given top rankings by Google algorithms and Facebook timelines. Empowerment for grassroots media actors like bloggers, as well as awareness-raising for minority issues among professional journalists, will contribute to putting minority issues on the mainstream agenda, with the help of social media. The tools are at hand and it is time to make even better use of them.

Even if the Internet makes it harder for fringe content to capture the attention of a mainstream audience, there are two things that should be remembered: first, the Internet offers the possibility for the remotest, most unlikely content to gain the attention of a global audience. Korean choreographer-singer Psy, US teen star Justin Bieber and all forms of grumpy cats are just a few illustrations of how the Internet can be a global stage for everyone – without judgement on the relevance of content.

Second, sometimes it is not the technical infrastructure of the Internet that bars content from reaching mainstream attention but rather the content itself that does not appeal to a larger audience. Especially in fragmented or traumatized societies, reporting about delicate issues might not be easy or is itself taboo (Möller, 2012). Developing new forms of journalism, including innovative narrative formats and forms of cross-media storytelling, need to be developed to cover issues that are not easily conveyed in words. And media is not just a matter of technical skills or access to networks but also of organizational structures; newsrooms, editorial structures, professionalization of grassroots journalism might be means to support minority media across all platforms, new and old.

The Internet offers niches for everyone, but on the large scale its algorithms favour mainstream content. In the absence of protection schemes, integration tends to morph into assimilation. Thus, it is important to develop strategies and make resources available to preserve minority cultures and languages.

Unless we learn how to assess and influence the role of technology on media, initiatives for minority media will lose momentum. Previous gains of the minority media in relation to the traditional media might effectively be nullified in the presence of technological decisions made on a totally different level than traditional policy debates. However, even purely technical decisions might have unintended consequences and need to be raised from an engineering discourse to a policy level. Or, to use the words of Lawrence Lessig once again: 'We should interrogate the architecture of cyberspace as we interrogate the code of Congress. […] The law of cyberspace will be how cyberspace codes it, but we will have lost our role in setting that law.' (Lessig, 2000)

Notes

1 See also the Open Society Institute's (OSI) program *Mapping Digital Media*, at: http://www.opensocietyfoundations.org/projects/mapping-digital-media.
2 Conseil Supérieur de l'Audiovisuel.
3 Federal Communications Commission.
4 Radio-electronics.com, "What is DVB-T?", 2013, at: http://www.radio-electronics.com/info/broadcast/digital-video-broadcasting/what-is-dvb-t-basics-tutorial.php .
5 Digital Video Broadcasting Terrestrial (DVB-T).
6 See also the United Nations (UN) Special Rapporteur on Freedom of Opinion and Expression, the Organization for Security and Co-operation in Europe (OSCE) Representative on Freedom of the Media, the Organization of American States (OAS) Special Rapporteur on Freedom of Expression and the African Commission on Human and Peoples' Rights (ACHPR) Special Rapporteur on Freedom of Expression and Access to Information (2011) Joint Declaration on Freedom of Expression and the Internet. http://www.osce.org/fom/78309.
7 RFC 920, *Domain Requirements*, October 1984, at http://tools.ietf.org/html/rfc920.
8 RFC 1591, *Domain Name System Structure and Delegation*, March 1994, at: http://tools.ietf.org/html/rfc1591.
9 RFC 1591, *Domain Name System Structure and Delegation*, March 1994, at: http://tools.ietf.org/html/rfc1591.
10 ISO 3166-1 alpha-2 codes are two-letter country codes defined by the International Organization for Standardization (ISO), to represent countries, dependent territories, and special areas of geographical interest. They are the most widely used of the country codes published by ISO (the others being alpha-3 and numeric), and are used most prominently for the Internet's country code top-level domains (with a few exceptions). They were first included as part of the ISO 3166 standard in its first edition in 1974.
11 At: http://www.domini.cat/normativa/en_index.html.

12 ISO 639-2 codes are the second part of the ISO 639 standard, which lists codes for the representation of the names of languages. The three-letter codes given for each language in this part of the standard are referred to as "Alpha-3" codes. There are 464 entries in the list of ISO 639-2 codes.

13 ICANN Board resolution of 15 September 2005, at: www.icann.org/minutes/resolutions-15sep05.htm.

14 In his paper, *Cultural Diversity in Cyberspace: The Catalan Campaign to Win the New .cat Top Level Domain,* Peter Gerrand (2006) also described the concomitant resources needed to support minority languages on the Internet and the implications for other languages.

15 ICANN, *Internationalized Domain Names*, at: http://www.icann.org/en/resources/idn.

16 In addition filtering might also be done according to government regulation, legal restrictions or voluntary codes of conduct. This might be particularly pertinent to minority content that deals for example with territorial integrity, autonomous regions or other issues that might be seen as disturbing or unwanted by other parts of society. However, the whole issue of mandatory filtering and blocking of Internet content is outside the scope of this article.

17 Internet Protocol Television.

References

Anderson, C. *The Long Tail: Why the Future of Business is Selling Less of More*. New York: Hyperion, 2006.

BBC. 'Wales Loses to Cayman Islands in Battle for .cym Domain'. Retrieved from http://www.bbc.co.uk/news/uk-wales-mid-wales-11683239.

Clark, D. D. *A Cloudy Crystal Ball – Visions of the Future*. Presentation given at the 24th Internet Engineering Task Force, 16 July1992. Retrieved from http://www.ietf.org/old/2009/proceedings/prior29/IETF24.pdf.

Digitag. *The Status of Digital Terrestrial Television (DTT) in the Former USSR Republics*, 2009. Retrieved from http://www.digitag.org/MembersOnly/Reports/Post-Soviet%20Report%20Version1.2.pdf.

European Court of Human Rights. *Positive Obligations on Member States under Article 10 to Protect Journalists and Prevent Impunity,* 2011. Retrieved from http://www.echr.coe.int/Documents/Research_report_article_10_ENG.pdf.

Gerrand, P. 'Cultural Diversity in Cyberspace: The Catalan Campaign to Win the New .cat Top Level Domain, *First Monday* 11 (1-2) (2006). Retrieved from http://firstmonday.org/ojs/index.php/fm/article/viewArticle/1305/1225.

Gillmor, D. *We the Media. Grassroots Journalism by the People, for the People*, Sebastopol, CA: O'Reilly Media, 2004.

The Independent, 'Wales Loses Virtual Turf War with Caymans over ".cym" Domain Name', 5 November 2010. Retrieved from http://www.independent.co.uk/life-style/gadgets-and-tech/news/wales-loses-virtual-turf-war-with-caymans-over-cym-domain-name-2125677.html.

Kovacs, N. and M. Stone (eds.). *Guide to the Digital Switchover*. Vienna: OSCE, 2010.

Lessig, L. *Code and Other Laws of Cyberspace*, New York: Basic Books, 1999.

_____ . 'On Liberty in Cyberspace', *Harvard Magazine*, January-February 2000 Retrieved from http://harvardmagazine.com/2000/01/code-is-law-html.

Lucchi, N. 'Access to Network Services and Protection of Constitutional Rights: Recognizing the Essential Role of Internet Access for the Freedom of Expression', *Cardozo Journal International and Comparative Law* 645 (2011), 645-677.

Mendel, T. *Freedom of Information as an Internationally Protected Human Right – Article 19*, n.d.. Retrieved from http://www.article19.org/data/files/pdfs/publications/foi-as-an-international-right.pdf.

Möller, C. *Amok, Unfall, Katastrophen: Journalismus in traumatisierenden Situationen*, Carta, 29 October 2012. Retrieved from http://carta.info/50369/amok-unfall-katastrophen-journalismus-in-traumatisierenden-situationen/.

Moeller, C. 'Governing the Domain Name System: An Introduction to Internet Infrastructure'. In: C. Möller and Arnaud Amouroux (eds.), *Governing the Internet. Freedom and Regulation in the OSCE Region*, Vienna: OSCE, 2007. Retrieved from http://www.osce.org/fom/26169.

_____ and A. Amouroux (eds.). *Media Freedom Internet Cookbook*, Vienna: OSCE, 2004. Retrieved from http://www.osce.org/fom/13836.

_____ and A. Amouroux. *Governing the Internet. Freedom and Regulation in the OSCE Region*. OSCE: Vienna, 2007. Retrieved from http://www.osce.org/fom/26169.

_____ and M. Stone (eds.). *2013 Social Media Guidebook*, Vienna: OSCE, 2013. Retrieved from www.osce.org/fom/99563.

O'Reilly, T. *What is Web 2.0? Design Patterns and Business Models for the Next Generation of Software*, 30 September 2005. Retrieved from http://oreilly.com/pub/a/web2/archive/what-is-web-20.html.

Pew Research Center, *Minorities Rush to Twitter, Instagram, Smartphones*, 14 February 2013. Retrieved from http://www.pewinternet.org/Media-Mentions/2013/Minorities-rush-to-Twitter-Instagram-smartphones.aspx.

_____ *The State of Social Media Users*, 14 February 2013. Retrieved from http://pewinternet.org/Reports/2013/Social-media-users/The-State-of-Social-Media-Users.aspx?view=all.

Rosen, J. 'The People Formerly Known as the Audience', *Press Think*, 27 June 2006. Retrieved from http://archive.pressthink.org/2006/06/27/ppl_frmr.html.

Surowiecki, J. *The Wisdom of Crowds*, New York: Random House, 2005.

Pariser, E. *The Filter Bubble: What the Internet Is Hiding from You*, New York: Penguin Press, 2011.

United Nations General Assembly, *Report of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression*. A/HRC/17/27, 16 May 2011. Retrieved from http://www2.ohchr.org/english/bodies/hrcouncil/docs/17session/A.HRC.17.27_en.pdf.

Williams, E. *Five Reasons Domains Are Getting Less Important*, evhead, 2011. Retrieved from http://evhead.com/2011/06/five-reasons-domains-are-less-important.html

Working Group on Internet Governance, *Report*, June 2005. Retrieved from http://www.wgig.org/docs/WGIGREPORT.pdf.