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Co-designing convivial tools to support participation in community radio

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ABSTRACT

Connectivity made possible by the diffusion of digital technologies has offered new possibilities for the public to interact with media, including radio. However, interactions are often framed by globally managed platforms, owned by companies with values based on maximizing profit, rather than prioritising Illich's forms of conviviality. In this article, we draw on experiences from the Grassroot Wavelengths project that introduces an innovative peer-to-peer platform to support the creation and management of community radio stations. We offer insight into the practices of participation in community media, where the users influence decisions concerning the technology, the content, the actors and the organization policy of the radio station, through a participatory design approach. These collaborations between researchers and users, together with a focus on the development of relational assets in local contexts, are fundamental in an attempt to design a platform that fosters conviviality and offers an alternative way to consider participation in community media.

INTRODUCTION

This article is the result of a collaboration of an interdisciplinary group of researchers with expertise in human and computer interaction, participatory design, science and technology studies, media studies and applied psychology. We are all involved in an innovation project, the Grassroot Wavelengths (GW), aimed at supporting the creation of a network of community radio stations in rural and isolated areas in Europe and 'pilot solutions for participatory innovation in the domain of media pluralism' (European Commission 2018). At the forefront of our endeavour is that the participating communities are directly involved in the creation, management and governance of these stations. To accomplish that, we apply a participatory design (PD) approach that allows us to co-design with the community members a platform based on consolidated technologies – FM radio and telephone – which is supported by the use of new technologies and practices inspired by commons-based peer production platforms and civic media.

In this work, we draw upon our reflections of the participation processes and community engagement work in the GW project which support the creation of the community stations with digital technologies that are less expensive, and support peer production. We problematize the meaning of 'participation' in relation to media and communication, beginning with Nico Carpentier's (2012, 2015) Access, Interaction, Participation (AIP) model. We show how, from our experience in these contexts, participation is an ongoing interaction involving decisions concerning the actors involved, the production of content and the institutional framework. Further, using Illich's concept of 'convivial tools', we stress the importance of the users' involvement in the co-design processes of these technologies and the need to support the creation of local relational assets as opposed to a standardization and commodification of individuals and communities currently fostered by the contemporary platform capitalist society paradigm.

We present the challenges and opportunities that we have faced so far as part of the practice of fostering participation with media and trialling a new technological platform for peer production in the context of our community

radio stations. We hope that this will inform current status of knowledge and motivate further practice and discussions amongst media and radio experts and community engagement practitioners.

BACKGROUND: DIGITAL MEDIA AND PD

AIP in community radio

In this section, we will introduce Carpentier's AIP model for participatory processes in media (Carpentier 2012; 2015), which distinguishes between access, interaction and participation, and suggests that they are linked, and together offer an analytic framework to understand radio production and reception. While, access refers to the presence of technology, content and the people needed to make radio, interaction is the socio-communicative relationships between people and the objects needed to produce and receive media content, participation is reliant on both access and interaction. For Carpentier (2015) participation refers to the 'importance of equal power positions' in decision-making regarding production and reception of media. 'Access and interaction remain important conditions of possibility of participation, but they cannot be equated with participation' (Carpentier 2012: 174), which for Carpentier involves decision-making and power, with different levels of participation enabled through different levels of access and interaction. Carpentier relates the AIP concepts to four different areas: technology, which is the tools that support the core operation/broadcast of community radio; content, the core of the broadcast; people, who use the technology and produce content and organizations; the media themselves. These four areas are used to offer insight into both content production and reception.

Types of interaction and participation depending on access to technology

Carpentier's analytic framework emerges in a period where the pervasiveness of Internet and social media platforms has created the conditions for traditional media, including radio (e.g. Sinton 2018), to modify relationships with audiences. Looking specifically at radio, Bonini (2014) describes four stages of audience interaction mediated by the emergence of and access to different technologies. Initial radio technology enabled radio as a unilateral communication tool. Later, transistors, telephones and underground radio created possibilities for a wider sector of society, including those previously ignored, to take part in radio production. In the third stage, audience interaction was increased by the presence of SMS and e-mail, followed by streaming, blogs and podcasting. Finally, the rise of social networking sites gave birth to a more 'productive' and 'networked' public (Bonini 2014: 6), where people are more visible/audible, becoming the social capital of radio, and where different speaker/listener and listener/listener interactions are possible (e.g. the possibility to chat privately or to comment on radio content through social media). Listeners commenting about a radio show online can reach a wide audience and can influence radio reception. It is this final stage of technological advancement and its impact on public interaction – and therefore participation in community radio platforms – that is of interest in this article. The next section will explore how current technological developments can influence public or audience participation in varied ways.

Participation during platform capitalism

The contemporary impact of digital social platforms on public participation is undeniable. Srnicek (2017) suggests that we are currently in the age of ‘platform capitalism’, in which access to large-scale online communication platforms dominate forms of social interaction. This marks a major transition in how citizens interact with and through media technologies.

Critical perspectives frame participation in such platforms as a form of consumer (Jarrett 2015) and ‘free labour’ (Terranova 2000). These forms of labour are voluntary and unpaid, and are associated with activities such as promoting oneself on LinkedIn, using Google and smartphone apps, or posting on Instagram, which digitize and commodify affective work, communication skills and interpersonal relations. In this way, digital technologies have become new sources of capital accumulation enabling digital industries to provide new possibilities for capital valorization (Scholz 2016; Srnicek 2017). As illustrated elsewhere (Teli et al. 2018), these novel forms of capital accumulation are based on economic and technical processes, which have been defined as ‘audience commodity’ (Fuchs 2012), in which the audience is sold as a commodity to advertisers. In this respect, ‘heteromation’ – the idea that the free labour people engage in on digital platforms yields economic value, for companies rather than the user (Ekbja and Nardi 2017), suggests such platforms are designed to exploit users’ participation for profit, rather than for the public good.

Platform capitalism then can lead to a concept of *sharing* connected to a business model of scaling. Scaling is a process that commercial platforms use to homogenize interactions regardless of context, individualize and monetize transactions; and is described as crisp and unscrupulous in that it weakens social and legal protection to prioritize profit-making (Light and Miskelly 2019: 597). The assumption of platform capitalism *is* that companies control the technologies and the data upon which their business model is built. This type of platform design offers a model of interaction that limits the equal decision-making of the user and predetermines particular types of participation.

Although this is currently the dominant model of platform engagement, many mechanisms used in these platforms were originally derived from networked communication practices, such as Bulletin Board System newsgroups and collaborative platforms for developing free/open software. We argue that platforms do not need to be based on the exploitation of labour or emphasis on profit-making, and the initial ethos of movements such as free/libre open-source software (FLOSS) can be harnessed to support a more convivial manner of engagement. There exist many alternatives for communities to control technology, from the design stage to global scaling, which can be harnessed. In particular, we draw on PD, commons-based peer-production platforms, and civic media that offer community- and user-centred examples to support community radio participation that counters the potential influence of platform capitalism.

Co-designing convivial tools for community radio interaction and participation

PD includes theories, methods and practices that allow ‘future users’ of technology to influence technologies’ shape (Simonsen and Robertson 2012). PD originated in Scandinavia in the late 1970s to early 1980s as a way to allow trade unions to influence the design of workplace technologies. In response

to the changing landscape of platform capitalism (Avram et al. 2019), PD has evolved to include a problematization of the forms of participation that platform capitalism enables (e.g. Teli et al. 2016). In particular, it suggests a transition from the concept of scaling inherent in platform capitalism to meshing, 'that is the layering of local sharing initiatives, developing and maintaining local collective agency through their aggregation' (Sciannamblo et al. 2019: 2). This idea of connecting community sharing initiatives relies on 'relational assets', rather than financial rewards (Light and Miskelly 2019; Sciannamblo et al. 2019), allowing the relationality that contemporary capitalism commodifies, while moving away from commodification itself. This, we believe, is in line with the philosophy of community radio, as a platform run by the community, for the community.

The second alternative to the centralized control of technology and data, inherent in platform capitalism, is *platforms as commons* (Poderi 2019), technologies designed with a focus on 'various arrangements for the shared ownership and management of both their infrastructures and services, or products' (Poderi 2019: 244), rather than profit-making. An example is FLOSS (Söderberg 2015), a movement that aimed to find an alternative to the constraints of commercial, proprietary (closed) software. The possibility to customize, correct bugs and better understand the functioning of proprietary platforms inherent in FLOSS has resulted in its popularity and recognition as an alternative source of technology education, development and distribution. FLOSS aims to support the public good and 'new methods of Internet-enabled collective action' (Csikszentmihályi 2012).

Taking into account PD and learning from platforms as commons such as FLOSS, the RootIO platform was designed with commons-oriented methods, the values of the FLOSS movement and those of community radio (Csikszentmihályi and Mukundane 2016) in mind. It combines community radio technology with a peer-to-peer platform to enable community sharing based on relationality rather than profit.

Both PD and platform as commons approaches are in line with the concept of convivial tools proposed by Ivan Illich (1973). The term conviviality stresses the importance of individual freedom reached through interdependence and control of the surrounding material world. It is in opposition to industrial productivity, which Illich (1973) suggests creates a consumer society and a dependency impossible to satisfy. Convivial tools are intended as rationally designed devices (Ameripour et al. 2010) that can be used by anyone, not just specialists or elites. He warned against machines whose power decreases people to mere consumers, as has arguably occurred in platform capitalism. Convivial tools, in contrast, support the independent efficacy of their users. Illich (1983) argues that 'new electronic devices do indeed have the power to force people to "communicate" with them and with each other on the terms of the machine' and that we must create tools that support the idea of a commons and equal participation. He suggests that the advent of the first loudspeaker (the precursor to radio?) ended a public silence from being the commons, which conferred to everybody the possibility to have an equal voice.

We follow this line of thought, connecting participation, the influence of digital media in society, PD and conviviality and ask the following questions: *how can PD contribute to the development of convivial tools? What are the practical challenges and opportunities of using digital technologies together with PD to support participation in the media?* To answer these questions, in the next section, we

will introduce GW, a project using a PD approach to lower communication costs between communities and amplify their self-determination.

THE GW PROJECT: CO-DESIGNING CONVIVIAL MEDIA TOOLS

The project

GW is a European Commission Horizon 2020 funded project focused on isolated geographical communities in Portugal, Romania and Ireland (Cibin et al. 2019; Sciannamblo et al. 2019). It is a civic media innovation based on RootIO technologies (Csíkszentmihályi and Mukundane 2015, 2016). In order to make community radio stations less expensive to found and operate, a platform was designed as a free/open hardware and software system that allows a low-power FM radio station based on a smartphone, FM transmitter and an antenna, to operate without requiring a studio. The community may schedule the broadcasting of pre-uploaded audio content, streaming audio-media and podcasts through a web interface, but otherwise interact entirely through their FM radio and phone. Using only a basic phone, controlling interaction through interactive voice response (IVR), locals can conduct live shows with callers; locals can record ads or announcements; and citizen journalists can cover live meetings, sports events or discuss issues pertinent to them. The community members listen on FM radio and interact with the station through their (non-smart) phones. This technology grants many of the connectivity and functions of a bigger station for roughly 1/100th of the cost.

RootIO shifts the way the content is created, transmitted and shared via digital technology, while maintaining conventional FM radio. GW's goal is to proliferate local community radio stations through the support of citizen engagement, community deliberation, community action, media pluralism, linguistic diversity and the free flow of information within and outside these geographic communities. The project focus is on the co-design of new features and processes able to support community engagement, as well as station governance and management, including through the integration of new technologies such as text-to-speech (TTS). The project approach includes features of PD for setting up stations and content, as well as understanding the processes in which they will be used and appropriated, with the involvement of community groups, journalists and public good experts.

In addition to the technology, the institutional arrangements for community radio licencing also configure participation (Cibin et al. 2019). For example, in Romania, GW partners had to apply for a commercial licence, in Ireland for a community radio license and in Portugal for short-term experimental licenses (Cibin et al. 2019). Currently, two stations are running 24/7 in Romania, one broadcasts weekly for three hours in Ireland (with another applying for a license) and two stations temporarily broadcasted in Portugal.

Method

From the project's description, it is clear that the GW Project and RootIO's initial assumptions are in line with the four characteristics that Illich used to define a convivial tool, summarized by Ameripour et al. (2010: 246):

1. Users, rather than the designers of the technology, must have the power to shape it according to their tastes, desires and needs.
2. Convivial tools must promote communities and encourage and maximize communication amongst the members of society.

3. Convivial tools must make the most of the energy of individuals and maximize and encourage creativity and imagination of users.
4. Users of convivial tools must not be mere consumers but also producers and contributors to the technology.

This conceptual framework will be used in the next part of the article to show how this shared idea of participation shapes the practices of designers and communities engaged in the deployment and testing of a platform that supports the creation of community radio stations.

The authors have been working in different capacities on the project, which can be summarized by activities of project coordination, community building, technological support and development, and communication. The empirical data draw on participant observations during the setting up of the stations, the engagement of the communities and the radio broadcasting. Other sources of empirical data include internal and public documents produced during the project. In the first group, there are minutes of general assemblies, e-mails within the consortium, project reports; in the second group, the project's Grant Agreement, deliverables and the communication material. These varied empirical sources have been analysed following the case study methodology (Denzin and Lincoln 2017).

PRACTICES OF PARTICIPATION IN A COMMUNICATION PLATFORM DESIGN PROCESS

Strategies to engage the local communities

In each of the three countries in which the GW project is operationalized, there is a project partner tasked with community engagement. This section will briefly explore the experiences of participation and the process of citizen engagement in Ireland, Romania and Portugal. In each location, a slightly different approach was taken depending on the relationship of the project partners with the local community. In general, however, the project teams approached communities and introduced the possibility of participating in community radio platforms. Initial engagement was often through community 'gatekeepers' (members of the community that have influence and access to other community members) in local governance institutions, community representatives, cultural or sports groups, schools or other interested individuals. Information spreads in the communities through existing channels. This initial stage also included community meetings and workshops where the authors emphasized the goals of a voluntary and participatory community radio platform, operated and owned by the community. Furthermore, remote technology demonstrations were carried out both to inform community members, but also in order to gauge community interest in and expectations of the radio platform.

In one community in Portugal, community volunteers participated in the preliminary activities to set up the station, because they saw the radio platform as a valuable opportunity for representation and promotion of their work, as well as supporting their individual interests. They considered community radio as providing an avenue to promote local issues and languages, as well as an optimized tool for their work. For example, the local librarian saw in this technology the opportunity to disseminate her original stories to a broader public. The parish president and fireman recognized how this platform could strengthen the community, as well as being used during emergency situations

for public alerts. They also saw it as a possibility to improve inclusion of a group of 're-pats' recently arrived in the town. For instance, one community member, a teacher, approached the project team with the wish to participate and later became very engaged in radio content production, making live interviews using her phone. In another Portuguese community, despite similar engagement techniques used, the locals did not fully engage, mostly due to a lack of openness, and a fear of upsetting the authorities through the community radio platform, since local community organizations were over-dependent on the local and municipal governance for support. A negative feedback loop occurred, in which associations that had initially expressed interest in the project, but were dependent on public support, progressively withdrew their support.

In Ireland, one community has been broadcasting radio on a temporary licence since March 2019. Despite a very small population of only 167 individuals, five volunteers are contributing regularly to broadcasts, and many more community members participate informally as well. The initial ambitions of the community were to include the diaspora in radio activities, and this has been achieved through the regular broadcast of church services online and on FM; and of community events like the annual Gaelic games final, which was received well with diaspora living from Australia to Argentina. A challenge, now, is to ensure participation in the radio is meaningful and aligned with existing community routines, rather than something that adds labour burden. The small island community is experiencing a sort of mediated expansion through the radio, with neighbouring rural communities now participating through listening in and providing local reports. In addition, civic engagement has increased, with local community members interviewing local politicians in the wake of elections and engaging them on local issues. Two more island communities are now coming on board with the project, and initial community consultations suggest an interest in all of these neighbouring islands having a platform to share news amongst themselves and to come together on issues of common interest and importance.

In some of our test communities, key gatekeepers are essential in encouraging participation in the radio. In one Romanian community, a local social worker has shown a strong interest in volunteering at the radio station. She plays a key role in the community: she knows everyone and plays a vital role in other core community activities. Thus, her eagerness in this project has been a positive step towards encouraging participation of local community members living both near and far in the radio. Daily, she records via her mobile roughly fifteen to twenty different materials and shares them with the Romanian project partners. Moreover, she also promotes awareness of the radio to other community members and encourages them to participate. Overall, her involvement in encouraging community engagement has leant credibility to the station in a community where many of its members were initially sceptical of its potential.

Different appropriations of the platform

As a platform, RootIO is intended to lower the technical barriers to participating in community information sharing, decision-making and local media. In this section, we will present how each community appropriated the platform, which in turn had an impact on the PD process.

For the Romanian communities, it was hoped that the implementation of live call-in programmes could further support the participation of members in the community radio. At the moment, the creation of radio content is a time-consuming process. The current procedure involves project partners in Romania moderating a WhatsApp group, where community members are sharing audio content. This content is then edited by the partners and uploaded through the RootIO platform. Editing content for broadcast on the platform requires a significant amount of time and technical skill, which many community members are not capable of. The live call-in feature, which allows for more spontaneous interaction and participation, without the need for pre- or post-production of audio content has not yet been implemented in Romania.

Platform appropriation unfolds in a different light in different communities. In Ireland, project partners involved in local engagement are also part of the community: while they would not identify as a quasi-governmental organization, they are often positioned in this way, given delegation of administrative duties through State funding. They are driven towards supporting sustainability of the island in terms of population and community activities. Moreover, their community radio committee includes media professionals with backgrounds in sound engineering, radio production and journalism. On top of this, Ireland has a robust national network of support for communities, setting up a community radio station, which also supported the community in hosting training events for interviewing and radio production. The strong heritage of community radio in Ireland is driven by a consensual notion of professionalism in production and broadcast. The community members were disconcerted with the complexity of the RootIO platform. They found the system complicated and difficult in supporting reliable broadcast community radio. These issues had an impact on the community platform appropriation. In particular, the community was overburdened with the need to pilot a new technology while in tandem, supporting radio engagement. Additionally, they were concerned about expectations of having a reliable broadcast. As a result, they created a parallel system, modelled on those used in a professional radio context, which has proven reliable. However, operating the system requires the expertise of a select few people in the community, which is in contrast to the potential of the RootIO platform in providing a simple way of scheduling and broadcasting content, reducing the time-consuming aspects of scheduling content in real time.

New technologies to support participation?

Another goal of the project is the integration of TTS capabilities into the RootIO software. TTS technology allows a synthetic voice to 'read' aloud digital text from various sources: contemporary synthesized speech generated through TTS can sound very similar to the human voice. The intentions of integrating this technology into the RootIO platform include increasing accessibility to both community and Internet data and providing labour support for community stations, such as assisting in content generation for round-the-clock broadcasting (a legal requirement for the two Romanian stations) and supporting communities that have volunteer fatigue. These proposed integrations focus on values like accessibility and flexibility and include the development of open-source voice synthesis tools. These tools will allow communities to generate their own voices and to prevent stations from being limited to

commercially available voices, which may not be representative of the local community in terms of voice features such as accent, gender and age.

Initial use-cases were all conceived as automated methods for sharing information over the radio, where once in place, the presence of a host, editor or curator is not needed for generation of new content. Examples include soliciting listeners to interact through templated messages for specific purposes such as song dedications or advertisements, or automated content pulling from trusted Internet sources such as a news RSS feed or local government social media platforms. As the project has progressed, discussions with station managers, community members and community radio experts have yielded a somewhat different conception of the value of TTS technology, positioning it as a tool for inspiring imaginative content, rather than solely as a labour-saving tool. Examples include giving voice to a person that might not feel comfortable having their voice on the radio or using it as a pedagogical language tool in the case of minority languages like Irish.

In practice, the question of how, or if, to integrate TTS technology into station software has been controversial, with reactions and differing opinions connected to the uncertainties related to such a new technology. The project has already faced, and worked to address, ethical questions around requesting community members to become voice 'donors' for locally accented voices (Scott et al. 2019). The concept of a synthetic voice on community radio can be viewed as antithetical to the intimate, authentic experience expected from the medium. Additionally, it brings up questions of content source, fake news concerns, voice manipulation, algorithmic content generation bias and the taking of jobs. Along with such concerns have also been calls for the necessity of TTS integration for labour-saving purposes, as well as some re-conceptualizations of the potential value of the technology, perhaps more aligned with encouraging creativity and imagination of users.

Community radio as commons

One of the project's goals is to co-design, with the communities, technological features 'oriented towards opening up the governance of radio stations at the local level' (European Commission 2018). The rationale for this task is to foster community ownership, encourage access of different community members, including marginalized members, and to avoid the overtaking of stations by a few individuals or interests.

For this reason, we started a preliminary theoretical reflection on the theory of commons (Ostrom 1990), its adoption by the open-source software communities (e.g. Schweik and English 2012; Schweik 2014), and a more recent debate on platform cooperativism (Scholz and Schneider 2017), a way to share ownership of Internet resources rather than the exploitation inherent in platform capitalism. This is the analytic framework for community radio station governance, and in particular how tasks, rules and roles are defined and managed.

These reflections were shared with project partners, and those interacting with communities, and resulted in the design of a tool that can support making assembly/meeting decision-making (already present in two of the communities involved) more transparent and inclusive through the use of the RootIO technology, telephony and FM radio. For this reason, a mock-up of guidelines (both for desktop and mobile) that shows how to broadcast community meetings and to engage participants through the use of call-ins

has been developed. The guidelines describe how various kinds of assemblies can be broadcasted through the use of a basic phone and how people unable to be present can participate with a simple call. Preliminary discussions have indicated interest from two project partners and scepticism from another partner who underlined how, in their community, people might be less open during the assembly due to the presence of the radio.

CONVIVIALITY AND PARTICIPATION: CHALLENGES AND OPPORTUNITIES

In this article, we asked ourselves the following questions: *how can PD contribute to the development of convivial tools? What are the practical challenges and opportunities of using digital technologies together with PD to support participation in the media?*

To answer these questions, we presented GW, a PD project aimed at supporting the creation of a network of community radio stations through the introduction and development of RootIO. This community information platform joins old technologies together with software and practices based on platform as commons approach, to make the accessibility and the management of radio stations simpler for local communities to own and operate and less exposed to the dynamics of platform capitalism in media communication.

PD and convivial tools

We showed how assumptions of PD processes are compliant with the criteria of Illich's convivial tools, where the focus is not on scaling (industrialization) but in meshing (conviviality). In our project, communities have the possibility to shape many aspects of the radio station, including the technology design itself. This is in line with Illich's first criteria of the right of users to shape the technology. The second criteria stress the importance for a convivial tool to promote communities and support communication in society. This is exactly what RootIO's affordances are trying to support: keeping the focus on the local areas while simultaneously allowing local communities to become part of a broader network of radio stations. We also see how this can occur in the case of the Irish station, without the use of the RootIO platform. Harnessing the energy, creativity and the imagination of users are the main points of Illich's third criteria and are fostered in the project through co-design activities and increasing the possibility for community members to become protagonists through easy-to-use technologies. Through the use of telephone, together with low-cost digital technologies, the hope is to increase possibilities for people to produce content and have a say in decision-making processes. This is also important in relation to Illich's fourth criteria, concerning the need to transform users into contributors and producers. The management of stations as commons, then, is aimed to avoid the misappropriation of such communication tools by a few individuals or interests. Finally, the introduction of new technologies, like TTS and IVR-assisted live programming, is intended to support the sustainability of the radio station, providing labour support and increasing accessibility to community and Internet data, but could also be used as a convivial tool in other, not-yet-explored ways.

Participation in practice

The GW project, during these last two years, has sought to translate initial assumptions and aspirations on participation (Carpentier 2012, 2015), into everyday activities of PD resulting in some preliminary participation

challenges and opportunities that will now be described. A first consideration relates to how differences in cultural background, institutional frameworks, people skills, etc. influence how people engage with the RootIO technology. This relates to Carpentier's concept of access, what is present. In the three pilot community radio stations, we see different appropriations of RootIO. In Romania, community partners try to use the technology as it was designed, since the possibilities allowed by the use of telephone are aligned with their vision of community radio and with the legal obligations mandated by the commercial licenses. In Ireland, the situation is different. The community has institutional support, a strong national tradition of community radio, the presence of professionals in the local radio committee and minimal broadcasting requirements of their licence (only three hours/week for the first year). Despite this, an initial perceived complexity of the RootIO platform and lack of on-site support led the Irish community to use a different platform which, in their opinion, was more reliable for broadcasting. While this platform meets most of Illich's principles for conviviality, the technology that enables the broadcast currently lacks the principle of usability by lay community members, not just by experts.

The discussion about the influence of TTS in content production and reception brings attention to a controversy related to the use of automation in the design of convivial tools. In the GW project, this technology is made more 'convivial' by the use of open-source tools that allow the community to design with their own voice, better representing the community in terms of accent, gender and age. This contributes to the avoidance of industrial scale up that 'stamps in an identical way the landscape of cities each having its own history and culture' (Illich 1973: 28). On the flipside, this technology brings up concerns about voice manipulation, fake news, the taking of jobs, etc. Discussing the use of TTS with community stakeholders opened new possibilities of use, towards potentially giving voice to people that cannot speak, providing synthetic voices for new creative programs and supporting minority language learning. Such contributions supported technology design in a more convivial way, following the imagination and the creativity of potential users.

The process of community engagement, described before, showed how participation is not a taken-for-granted activity. In one community in Portugal, the community saw the potential benefit and agreed to trial the technology. In a second Portuguese community, the local authority felt threatened by the technology's potential to change sociotechnical relations, and this negatively influenced the decision of local community members concerned it would affect their organizational sustainability. In Ireland, the situation is different again, with the radio supporting the development of the local community and extending community communication and participation to those who have emigrated. In this community, participation was initially about listening to radio content as a service but has now become more distributed, with community volunteers presenting and making decisions about content. The technical side, however, remains in the hands of experts within the community who volunteer their time. A next step is distributing governance of these skills to other lay community members, or using the scaffolding provided by the RootIO technology. In Romania, a social worker became the engine in the process of local community engagement. It is evident that in all these processes, the role of the gatekeepers and existing community technical

expertise seems fundamental, in encouraging people to participate and transmit necessary initial knowledge to establish community radio.

Supporting the governance of the stations through the use of features and practices inspired by commons-oriented platforms is another challenging issue, since it is a long-term process that needs sustained support. The co-design of a guidelines mock-up for broadcasting communities' assemblies is intended as a tool aimed at opening the decision-making process to a broader audience of participants. At the same time, the preliminary reactions to this feature underline the importance of adapting it to the different needs and requests expressed by every context.

There is a continuous interaction between decisions concerning the shaping of technologies, the production of content, the institutional framework and the actors involved. The Romanian partners, for instance, have a strong curiosity about the integration of the TTS technology and the telephone, since these kinds of technologies for content production can support their legal requirement to fill a 24/7 radio schedule. In contrast, different interests, expectations and a different institutional framework in Ireland resulted in the use of a different platform more in line with their traditional representation of community radio and easily usable by experts within the community.

CONCLUSION

PD processes as used in GW can be considered partial efforts to achieve conviviality. In order to be closer to the idea of a convivial society and to harness more communal values than those espoused by platform capitalism, PD processes need to focus, not only on the design of an object but also on sociotechnical infrastructure that can support sustainability of the tool and the interactions it allows. This process, for example, is evident in Ireland, where neighbouring communities of the first station who initially collaborated on radio content are now creating their own stations, with the possibility of a common platform where news can be shared between communities in the future. Through this process, Light and Miskelly's (2019) movement from scaling to meshing is made possible.

With this backdrop, the creation of spaces where power can be equally shared in decision-making is only one component in a broader attempt to foster participation in practice. In addition to Carpentier's understanding of participation as equal decision-making, it is crucial to consider participation as a situated process. Relational assets in communities need to be strengthened, together with awareness of how technology and the design process can be shaped to respond to dynamic community needs. In this way, through the interaction with a commons-based media platform, participants may become more convivial and civic engaged parts of their community. Illich's loud-speaker becomes accessible and can amplify more diverse capable voices in the community.

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