

Audio communication in the face of the renaissance of digital audio

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Abstract

In recent years, digital audio has undergone an explosion. The transformation of radio and its expansion to new channels and consumer devices, added to the rise of podcasts and streaming music platforms, have led to the transformation of the audio ecosystem. This transition from the audio medium to audio media has involved an integral change in content, as well as in its production and reception processes. In this regard, the aim of this paper is to approach the present digital audio scene from the standpoint of its content, formats, and broadcasting models as well as of the new professional profiles, business models, and consumer–relationship practices, providing a snapshot that is completed with a prospective reflection on the challenges facing radio in this new ecosystem.

Keywords

Digital audio; Radio; Podcasts; Podcasting; Music; Platforms; Formats; Streaming; Audiences; Professionals; Business models; Mobile devices; Smartspeakers; Distribution; Audio media; Audio communication.

1. Once upon a time: Audio

For thousands of years, human beings have been using sound to communicate and transmit knowledge to their fellow human beings. The emergence of the printing press, the printed word, and the image first coexisted with the voice and then took away its prominence, but digitization and connectivity are restoring its previous relevance. We are in the midst of an audification era. The popularization of podcasts, the increase in audio streaming platforms, the emergence of audiobooks and bookcasts, the interconnection of audio devices, and the growing importance of voice as a digital connection interface thanks to the standardization of virtual assistants and smart speakers have made sound one of the primary communication trends in recent years (IAB Spain, 2019; 2020; Kantar, 2019; 2020; Newman, 2018; 2019).

In the context of saturation of digital information and entertainment offerings, audio content has proven its ability to be heard and to attract attention, interest, imagination, and even audience engagement, which has led many audiovisual companies, publishers, and brands to boost its production. The diversification of formats and devices, as well as the convergence of screen media, has encouraged the emergence of novel forms of audio and content that maximize the potential and functionalities of receiving terminals to provide more immersive and interactive experiences (Rime; Pike; Collins, 2022).

Beyond the techno-determinist enthusiasm characteristic of cutting-edge technological development, the leap to the digital medium and the diversification of access equipment has resulted in an increase in the attention to and the frequency and personalization of audio consumption (Moreno-Moreno; Amoedo-Casais; Martínez-Costa, 2017) that has redefined listening practices and fostered the emergence of new manifestations of online audio. The transition from audio medium to audio media requires a reconceptualization of both the professional profiles and the professional routines and practices of the current communication ecosystem.

In parallel, the expansion of formats, devices, and content has given rise to unknown convergences between the socialization and individualization of listening: paradigms of a “tailored” experience, online radio platforms, music streaming, and podcasting and audiobooks enrich new habits of shared audio consumption (**Bonini; Monclús**, 2014). Freed from the technical constraints of the conventional Hertzian medium, online radio has given rise not only to increasingly niche communities of listeners, following the metaphor of the “long tail” (**Anderson**, 2006), but also to large audiences. Podcasts such as *Serial* (Sarah Koenig, 2014-2018) in the United States or *El gran apagón* (*Podium Podcast*, 2016–2019) in Spain have revealed the existence of not just an audience interested in these audio products but also a social audience willing to share their listening practices and interact around such content. At the same time, smartphones, tablets, and wearables have made it possible to create privatized audio worlds that add another dimension to our experience of this space (**Bull**, 2010).

This interplay between the socialization and individualization of listening has become particularly relevant during the Covid-19 pandemic. The lockdown and subsequent restrictions resulting from the health crisis acted as a catalyst for online audio. While radio, both online and offline, reaffirmed its role as an informative and entertainment medium (**Rodrero**, 2020), content such as podcasts and audiobooks experienced a significant boom as tales from the pandemic and even as production objects (**Brunn**, 2006). However, despite the emergence of such content and expressive forms, new platforms, and communities of listeners and producers, the drop in advertisers caused by the economic recession has underscored the urgent need to identify alternative financing models for audio media.

However, let us start at the beginning. When talking about audio communication and the challenges it faces in this new media ecosystem, one must mention radio. As it celebrates its first centenary, this auditory medium par excellence is still alive and evolving. Its resilient nature has allowed it to overcome, more or less successfully, its two predicted deaths: if the first led to a disorientation as a result of its loss of supremacy in the mid-twentieth century owing to the meteoric rise of television, the second, with the advent of cyberspace at the beginning of the twenty-first century, helped launch its most radical transformation.

2. The metamorphosis of the Hertzian medium

The explosion of the Internet pushed radio into a phase of mediamorphosis (**Fidler**, 1997) that entailed a complete overhaul of its offering and a diversification of its access systems and forms of analog consumption. This phenomenon, for which **Prata-Moreira-Martins** (2012) coined the term “radiomorphosis,” would drive a widespread digital transformation of radio on a global scale in spite of the reticence toward and uneven adoption of renewed transmission standards such as digital audio broadcasting (DAB), in-band on-channel (IBOC), or *digital radio mondiale* (DRM), and opened the door to other audio offerings that would achieve increasing prominence in this new media ecology.

The first milestone in this evolution was the launch of *Internet Talk Radio* by Carl Malamud in 1993. This was the first Internet radio station, whose content was able to attract an audience of nearly 100,000 people from around the world (**Blanchard**, 2013). This initiative would be backed by other internet-only radio stations, which streamed their own broadcasts over the airwaves. Parallel to the expansion of native radio stations, conventional radio brands extended their presence to the Internet, first as basic sites with station information, which, with the combination of offline broadcasting –in streaming– would later evolve into bitcasters (**Ribes-Guardia**, 2001). At this stage, the Internet seemed to be just another channel for live or simulcast signal broadcasting (**Franquet**, 1999), despite starting to integrate text content and nascent forms of interactivity and personalization.

In the second stage, according to **Cebrián-Herreros** (2008), the medium was established on the web: content went from being merely audio to being enriched with multimedia language and the interactivity of the digital environment. Radio adapted to the Internet and ceased to be instantaneous with the creation of mp3 content repositories. It was in this context that the second milestone in the evolution of online radio was passed: the advent of podcasting. A decade after the first Internet broadcasts, Dave Winner and Adam Curry created an application that allowed the automatic download of audio files to the *iPod* through RSS syndication technology (**Gallego**, 2010). It was with the podcast that radio began to make the listening experience more flexible (**Pérez-Alaejos; Pedrero-Esteban; Leoz-Aizpuru**, 2017).

Just as the leap to the Internet marked the end of the physical limitations that bound Hertzian broadcasting, podcasts permitted the listener-user to choose when, where, and how to enjoy the content that interested them. The consumption options offered by portable devices, even in the offline context, propelled podcasting into its next phase, which **Cebrián-Herreros** (2008) called “mobile cyber radio” or in mobility. Thus, another concept of radio was born in which sound and image merged; it was (more) interactive, (more) participatory, sharable, asynchronous, repeatable, reproducible, localizable, customizable, discontinuous, hypertextual, nonlinear, convergent, and on-demand (**Cordeiro**, 2012). Such a change also entailed a transformation of the professional profiles, processes, and routines involved in the production of radio (**López-Vidales; Sánchez-Serrano; Izuzquiza**, 2019).

The launch of the *iPhone* in 2007 and the expansion of wireless networks cemented this new concept of radio and the transformation of audio as a product (**Piñeiro-Otero; Terol; Vila**, 2019). The progressive standardization among users of high-performance connected devices –especially smartphones and tablets– led to a leap towards a more personal, interactive, and collaborative medium. Radio became an app, but it also expanded onto platforms and social networks, taking advantage of the trend toward permanent connection –the “always-on” paradigm. Bringing together the ability

to both receive and create multimedia content (texts, images, audio, videos, animations, etc.) in a single device provided radio with a powerful means to be listened to and heard (**Bonet**, 2007). Conventional and digital-native broadcasters expanded their presence to the cellphone with apps that broadened the Hertzian universe (**Ribes-Guardia et al.**, 2017) –a universe whose fusion of media, platforms, and languages would give rise to the concept of “transradio” (**Martínez-Costa**, 2015), capable of targeting an audience with an efficiency similar to that of narrowcasting.

Radio apps redefined the intimate and personal nature of the radio medium. Their features enabled the realization of personalized radio, customizable from the appearance of the interface to the automated selection of content, thanks to the capabilities of the terminals, their geolocation technologies, and recommendation algorithms (**Piñeiro-Otero**, 2015a). The widespread use of 3G connections began to standardize streaming as a distribution system (**Piñeiro-Otero**, 2015b). These apps also helped to strengthen the relationship between producers and listeners owing both to the ease of interaction, participation, and notification of content using mobile displays (**Pedrero-Esteban; Herrera-Damas**, 2017) and to their integration into other social platforms or devices, such as smart watches. These are potentialities that, although not exclusive to radio, have sound as a differentiating quality and anchoring element that distinguishes it from other media content (**Reis**, 2015).

Although the proliferation of mobile devices has led to the emergence of micro-moments of interstitial leisure –during waiting times, commuting, breaks, etc. (**Igarza**, 2008)– the multitasking nature of sound, which is compatible with almost any activity, has revitalized the dimension of the “always, anytime, anywhere” paradigm characteristic of the era of portability (**Kischinhevsky**, 2009). Sound accompanies and envelops the daily activity of people, creates private sound spheres with the selection of content-listening moments (**Perona-Páez; Barbeito-Veloso; Fajula-Payet**, 2014; **Oliveira; Portela; Vicente**, 2018), and makes room for new offerings that have diversified the audio journey (**Ormaechea; Fernández-Delkáder**, 2017): on the street, on public transport, at the gym, in the workplace, and in leisure and social environments, the number of people using integrated headphones is growing daily. Meanwhile, these transducers have become metaphors for personal sound spheres and shining icons of the so-called audification era (**Martínez-Costa; Legorburu**, 2020; **Piñeiro-Otero**, 2018). Among young people, the most radio-averse segment of the population (**Pedrero-Esteban; Marín-Lladó; Martínez-Otón**, 2022), headphones have come to be fashion accessories, repositioning listening halfway between listening enjoyment and identity-defining practice.

Streaming music platforms, podcasts, audiobooks, and other formats and audio content, such as audio games or urban mobile drama, share this space with radio on mobile devices and during listening time. Despite sharing some characteristics with cyber radio, these formats and content have returned to their roots to experiment with the narrative and expressive possibilities of sound. While radio became visible when it was put on screen (**Pedrero-Esteban; Barrios-Rubio; Medina-Ávila**, 2019; **Piñeiro-Otero; Martín-Peña**, 2021), audio storytelling in podcasts and audiobooks revived the classic radio language to attract interest and create mental images and other intensely imaginative experiences (**Rodero**, 2011; **Sood**, 2006). This is a language that has been enriched with creative formulas from the digital medium and innovations in audio recording/editing processes, such as the superimposition of layers and textures or the integration of 3D and 8D sound, capable of generating a binaural, immersive experience through headphones (**Muela-Molina; Piñeiro-Otero**, 2022).

This shift *from audio medium to audio media* has led to audience targeting and listening practices that have affected radio. Experimentation with the audio language through newly arrived formats convinced operators to invest in more creative and ambitious productions and to plan prerecorded content with more complex and careful execution. Additionally, having overcome the stage of technological fascination regarding what can be done, the functionalities and content of radio apps have been tailored to the habits and customs of their user community. This process has recast the broadcast of live or prerecorded traditional media as optimized and personalized accessibility, although its conceptualization and design must be modified according to the evolution of the devices themselves and the ever-changing adoption practices of listeners (**Barrios-Rubio; Gutiérrez**, 2021).

3. The podcast: radio without a schedule or antenna

In the renaissance of audio brought about by digital convergence, podcasts have become established based on their own merits as the medium with the greatest creative, social, and cultural impact and influence (**Linares; Fox; Berry**, 2018). Despite its embryonic link to radio, the podcast soon fostered the emergence of a community of independent creators. Just months after David Winer and Adam Curry introduced downloading of audio content through syndicated files (RSS), the journalist José Antonio Gelado, from Ávila, Spain, inaugurated the Spanish podcasting sphere with the publication of the first episode of *Comunicando*. Similar to the members of the first radio clubs, these pioneers of podcasting took on the profile of the geek, which led them to experiment with the new technology as producers and listeners, thus establishing networks for collaboration and exchange. This community would soon open up to other creators thanks to collaborative learning and the emergence of the first podcast aggregators, which facilitated the publication and distribution of content (**García-Marín**, 2020). It is this same community that demonstrated the validity of podcasting as a subculture, but also as an act of expression and reflection (**Merseko**, 2010).

In a context where the line separating content production and consumption becomes increasingly blurred (**Deuze**, 2007), podcasts represent a paradigmatic example of converging culture (**Jenkins**, 2006). Its repositories have hosted content from media brands but also from a community of independent creators whose production, self-publishing phi-

Iosphy, and alternative spirit turned podcasting into a do-it-yourself form of media (**Lankshear; Knobel**, 2010). The fluid coexistence of both types of production –by radio stations as well as an independent community– established two concepts of the podcast: that of an on-demand distribution format, and that of a new medium with unique attributes (**Chan-Olmseted; Wang**, 2020). Whereas, as a technological innovation, podcasting made the radio listening experience more flexible and became the gateway to new content, as a medium, it pioneered the exploration of its own language and expressiveness, giving creators and listeners an unprecedented degree of control over audio content (**Berry**, 2018).

However, a conception of podcasting as an on-demand audio distribution system would hinder the development of research in this area. Despite several relevant preliminary studies (**Sellás**, 2009; **Gallego**, 2010), interest from the research community in this phenomenon was limited and even superficial until the second decade of the 21st century, coinciding with the second era of podcasting. This concurrence is no coincidence: at that time, podcasts were just beginning to take off as an autonomous medium. **Bonini** (2015) pinpoints the beginning of this era as 2012 in the United States, when the leading podcasts on public radio broke away so that they could be financed through microdonations from their listeners. This change had an economic dimension, but also an emotional one, as it revealed the strength of the communities who had engaged with these audio creators.

The unprecedented success of *Serial* (Sarah Koenig, 2014) would highlight the renewed public interest in audio content. Although this true-crime podcast gave mainstream relevance to the podcast (**Hancock; McMurtry**, 2008), its success did not seem so unexpected in the context of increasing audiences and the rise of novel languages and narratives (**Berry**, 2015). In Spain, the second era of podcasting began in 2016 with *Prisa Radio*'s launch of *Podium Podcast*, a platform that made podcasts accessible to the general public, facilitated their discovery and professionalization, and, above all, provided the commercial perspective that was necessary for its consolidation as an industry (**Moreno-Cazalla**, 2017). The resulting boost to the productive sector and the increase in the number of players involved has not only fostered the emergence of the format but also encouraged the development of projects on a global scale (**Terol-Bolinches; Pedrero-Esteban; Pérez-Alaejos**, 2021). This aspect has been explored less by radio, which has focused on local markets despite recent –albeit still tentative– cross-border expansion initiatives (**Bonet; Fernández-Quijada**, 2022).

Despite their roots in a language common to radio, podcasts are developing their own audio identity thanks, in particular, to the abundance of players and the creative edge that fuels competition in the market. On the one hand, they have revitalized and reinterpreted some characteristics of radio communication, such as the intimate and personal style in which one voice relates everything it sees, thinks, or feels (**Bottomley**, 2015); the seriality of fiction genres (**Rodero; Pérez-Maíllo; Espinosa-de-los-Monteros**, 2019; **López-Villafranca; Olmedo-Salar**, 2020); and even long-form narratives (**McHugh**, 2012). On the other hand, its digital and prerecorded nature has allowed the development of more elaborate products that play with voice, music, sound effects, and silence, as well as with production, editing, and combining files and sources to present different ways of telling, expressing, and narrating.

As an example, in their adaptation of the radio report or documentary, podcasts seek to create an atmosphere through the story, in which the role of the narrator is complemented by dramatized reenactments, music, effects, situations, and atmospheres that create true auditory immersion and even holophonic experiences (**Legorburu; Edo; García-González**, 2021). The podcast rebels against Hertzian journalism, so linked to immediacy, through structures and resources that provide perspective, context, and clarity: it is a means to better understand lives and situations, address unresolved cases, present the unknown, offer new approaches to previously addressed issues, delve into past events, or explain the consequences of what happened (**Gutiérrez; Sellás; Esteban**, 2019). In this sense, the creative particularities of some podcasts give them an unusual ability to create visual experiences, so much so that they are beginning to be perceived as an audiovisual medium (**O'Meara**, 2015). Indeed, among its categories, the *Atresmedia Sonora* platform includes "films" produced only for listening. **Zuker** (2014), the executive producer of the television series *Modern Family* (ABC), tweeted in reference to *Serial* that "*My favourite TV Show is on the radio.*"

The versatility and adaptability of the podcast as a digital product has also contributed to its growing transmedia use to broaden the horizons of series and movies. In this way, the podcast not only provides continuity to the story or delves into the characters and geographical environments where the plots are set but also helps to strengthen ties with fans and reaches users outside of such stories (**Terol-Bolinches; Arense-Gómez; Pedrero-Esteban**, 2020). Moreover, audio adaptations and extensions of TV shows –there are numerous examples from both transnational operators (*Prime Video*, *HBO*, and *Peacock*) and Spanish ones (*Movistar+*, *RTVE*, and *Mediaset España*)– are beginning to be conceived of in the opposite direction. The Hollywood industry already sees fiction podcasts as effective and less expensive avenues to test new series. Some titles are also exported and adapted to other languages. In Spain, the first audio fiction from *Podium Podcast*, *El gran apagón*, formed the basis for a series shown on *Movistar+*, which would later be distributed in international markets, with the resulting economic return for its creators. The exploitation of intellectual property from original content has made its way to the audio ecosystem through podcasting.

In parallel to defining a language, an expressiveness, and even its own genres, significant advances have been made in the professionalization of podcasting. In contrast to the idea of the podcaster as a solitary creator of quasi-artisanal content, the consolidation of the industry has given rise to new professional profiles in media and platforms, as well as the proliferation of many production companies of different sizes that have focused on audio. The *Podcast Taxonomy*

project, a collaborative standard with an international and multidisciplinary outlook supported by the *Podchaser* database (now under the control of the Swedish company *Acast*) and the recruitment company *Staff Me Up*, is attempting to categorize and describe the increasingly heterogeneous and specific functions in the tasks of creation, production, and distribution in the form of a white paper. In version 1.1.0 (April 20, 2022), there are 65 roles in eleven categories (Table 1). Meanwhile, the community of independent podcasters, who are becoming increasingly less amateur, considers professionalization as one of its major motivations (**Markman**, 2012; **Markman; Sawyer**, 2014).

Table 1. Podcast taxonomy (*Podchaser & Staff Me Up*). Source: *White paper* version 1.1.0 (April 2022)

| Creative direction | Writing | Audio production | Administration |
|---|---|--|--|
| Director Assistant director Executive producer Senior producer Podcast concept developer Producer Associate producer Development producer Creative director Talent manager | Author Editorial director Writer Songwriter Story editor Managing editor Script editor Script coordinator Researcher Editor Fact checker Translator Transcriber Logger | Studio coordinator Technical director Technical manager Audio engineer Remote recording engineer Post-production engineer Music supervisor | Production coordinator Production assistant Booking coordinator Sales representative Sales manager |
| Cast | | Audio post-production | Video production |
| Host Guest Voice actor Narrator Announcer Player Reporter | | Audio editor Sound designer Foley artist Composer Theme music Music production Music contributor | Camera operator Lighting designer Camera grip Assistant camera |
| Marketing and community | Visuals | Miscellaneous | Video post-production |
| Content manager Community manager Marketing manager Social media manager | Graphic designer Cover art designer | Consultant Intern Assistant | Editor Assistant editor |

The creative and commercial possibilities of podcasts have induced radio operators to expand their offering of online content with exclusive, different, and competitive products, beyond radio's original strategy of considering online distribution as a channel added to the Hertzian broadcasting of programs (**Ribes-Guardia; Pérez-Alaejos; Porta**, 2019). Moreover, at a time when digital audio is one of the areas of greatest expansion in the field of communication, many companies have opted to use the podcast as a strategy to expand and diversify their contact with their audience (**Rojas-Torrijos; Caro-González; González-Alba**, 2020; **Martínez-Costa et al.**, 2021). "The Daily," a daily news podcast from *The New York Times*, has a community of subscribers larger than the newspaper itself has, with billions of downloads each day; its success has been replicated in newspapers and media outlets around the world. In Spain, the major newspapers –*El País*, *El mundo*, *elDiario.es*, and *La Razón*– have launched their own daily news podcasts (**Martínez-Costa; Lus-Gárate**, 2019; **Leoz-Aizpuru; Pedrero-Esteban**, 2022) and even have integrated divisions such as *El País audio*, whose productions allow a more thoughtful and considered approach to certain topics or issues of interest to its readers.

The greatest contribution of these new variants, in addition to expanding the range of listening options, is that they revitalize the canons of the radio news story and turn audio into an attractive communication channel for the press, which, through this product, reaches new users and regains one of its most valued attributes: its usefulness in helping to interpret the world around us, now using narratives and languages adapted to digital audiences. In addition, the conversational formula of news podcasts from newspapers helps citizens to better appreciate the work of editors at a time of disaffection toward journalism as a result of confusion and bad practice stemming from fake news (**Pérez-Escoda; Pedrero-Esteban**, 2021).

The major technology companies –Apple, *Google*, and *Amazon*, with even *Facebook* and *Twitter* exploring the format– have become global macro-operators of podcasts that coexist and feed off the content from a rapidly growing ecosystem of “audio entertainment” platforms (**Arrillaga**, 2022). *iVoox*, *Spotify*, *Podium Podcast*, *Cuonda*, *Podimo*, *Audible*, *Sybel*, *Convoy*, *Himalaya*, *Posta*, *Sonora*, etc., have become gatekeepers of a sort that bring in new listener-users but also introduce them to content, shaping and modeling this new listening culture. The snapshot of this rapidly evolving ecosystem is completed by the production companies, agencies, and other content creators that are fueling the explosion of digital audio in its various forms and manifestations (Figure 1).

In the struggle to attract increasingly targeted audiences, the major platforms are opting for original production and the acquisition of successful content and creators. *Spotify* has made this strategy its hallmark to gain and retain new subscribers by signing personalities such as Joe Rogan, Bruce Springsteen, Kim Kardashian, Barak and Michelle Obama,



Figure 1. Ecosystem of podcasts and audiobooks in Spain. Source: Pedrero-Esteban (July 15, 2022)

etc. The latter have been signed by *Amazon*, demonstrating how podcasting replicates the commercial inertia already established in the film, television, music, and book publishing industries. This also includes marketing and monetization efforts based on public-facing events that radio programs once were experts at leveraging for profitable advertising and promotional revenues: *Estrirando el chicle*, *Todopoderosos*, and *Entiende tu mente* in Spain and *La cotorriza* in Mexico are some noteworthy examples of such successes. These –and many other– titles reveal the popularizing power of these platforms and the effect of their recommendation algorithms, which have gradually influenced podcasters' creative processes: it is becoming increasingly complex for the independent community to gain visibility –literally, given the trend towards video recording of podcasts–to achieve viable audiences and the desired balance between business and autonomy (Adler-Berg, 2021). However, symbiotic relationships also emerge: the availability and increased consumption of podcasts has led to the conversion of a large group of listener-users into producers (Bruns, 2006), which has resulted in the growth and diversification of the independent podcast sphere.

4. The music plays... on streaming platforms

While podcasts were becoming mass media with their own language, market, business models, and community of listeners –and creators– different from those of radio, the other key form of radiomorphosis, i.e., streaming, was driving the expansion of the recording industry into the digital arena. It is worth remembering that, since its first appearance on the scene, radio has shared the audio space with music: emerging practically at the same time, the recorded music industry and FM stations established a close and fruitful relationship that has survived to this day (Moreno-Cazalla; Pedrero-Esteban, 2019). However, the adaptation to the digital medium would be abrupt and marked by tension between the new consumption and distribution practices of the listener-users and the phonographic industry's resistance to change networking and broadcasting models (Fernández, 2014).

The launch of *Napster*, considered the first major peer-to-peer (P2P) network for songs, in 1999 would drive a radical transformation of the music industry and its value chain (Gallego, 2017). This change, however, was not immediate: the popularization of P2P networks would lead to the decline of record labels obsessed with preventing piracy and not with creating new models of legal online distribution (Witt, 2016; Wikström, 2014). Reactively, the industry ultimately opened itself up to new distribution channels and the entry of players from outside the sector who dared to explore other business models (García-Gallardo, 2011). A paradigmatic example would be the *iTunes Music Store* (2003), Apple's online music distribution service, which for the first time facilitated access to/purchase of individual songs rather than complete albums, a model which, years later, would be replicated by *Google Music* (2011).

The most radical transformation in the industry, at least for the end consumer, has come from music streaming platforms. Services such as *Spotify*, *Deezer*, *Apple Music*, *Amazon Music*, *YouTube Music*, *Napster*, *Pandora Music*, *Claro Music*, and *Tidal*, among many others, provide access through freemium or premium models to extensive music catalogs that can be enjoyed anytime, anywhere. The editorial approach that has defined the phonographic industry since its beginnings has evolved to one of streaming (Fernández-Quijada, 2007), replacing physical or digital media-based products

with access and subscription. Streaming has become the driver of a music industry that is more competitive than ever (IFPI, 2022): with the proliferation of consumer devices and permanently connected users, the constant ability to be online is one of its unrivaled strengths (Fouce-Rodríguez, 2010) and the driving force of the penetration of platforms such as *Spotify*, *Deezer*, or *SoundCloud*. However, as pointed out by Jáuregui (2015), beyond the ubiquity of music, these services organize the offering according to playlist selection criteria and recommendations: as opposed to a predefined search by the listener-user, similar to traditional music consumption, the streaming offering enhances exploration and discovery, which positions them between push and pull media (Jenkins, 2009) with both on-demand access as well as prescribed content.

This music recommendation functionality is not new; as early as 2000, the *Music Genome Project* took a giant leap forward by developing an analysis model and suggesting songs based on specific musical features (using 450 attributes or genes, *Pandora*, n.d.). This model provided the foundation for the architecture of *Pandora*, a pioneer and driving force behind personalized radio stations such as *Last.fm* or *Radio365*. One of *Spotify*'s distinguishing features is exactly this efficient recommendation system; to offer its users a personalized experience, the platform has created three subscription models: one based on collaborative filtering, or song suggestions based on the listens of users with similar tastes; another based on natural language, which scans the network to identify terms used in track and artist descriptions; and a third based on audio processing, which uses convolutional neural networks –as also used by song identification apps such as *Shazam*– to match tracks according to their melodic variables (Nodd3r, 2022).

As listeners leave both the musical compilation and the recommendation and discovery of songs up to platforms (Morris, 2015), with concepts such as ownership or collection now being devoid of meaning, there has been a shift in the idea of music as identity-defining. The real-time listening experience provided by streaming platforms has resulted in a dramatic shift in the relationship between the listener and the music that brings the focus to the here and now (Wikström 2014). The opportunities to socialize that come with this experience, whether through the streaming platforms themselves or through connectivity with other social media services, make listening a form of expression, connection, and identity.

5. New guidelines for digital audio marketing

According to the *Annual Digital Audio Study 2021* (IAB Spain, 2021), 61% of the population in Spain consumes digital audio content, a figure that is almost 20 percentage points higher than that recorded in 2015 (43%). In countries such as the United States, this figure rises to 68%, a finding that confirms the upward trend in the amount of attention paid to this content, with weekly consumption periods that exceed, on average, 16 hours per individual. The coverage and reach of audio, the high brand recall it generates, and its exclusivity in terms of competition with other audio units (something that does not happen with screened devices, where the interface enables simultaneous consumption) are essential to understanding the format (Quintas-Froufe; González-Neira, 2021).

The development of audio content with highly specialized focuses makes it possible to reach hypersegmented targets, whose identifying features, ever better parameterized, make them extremely attractive niches for brands and advertisers: the possibility of connecting with them through audio results in a high conversion rate, which explains the growing increase in advertising investments in this format (Statista, 2022). However, to have an objective measurement in the market and improve the awareness of digital audio, the *Digital Audio Commission of IAB* Spain has provided a guide for the industry with standards that aim to serve as a frame of reference and provide clarity in this booming market in the form of a *White paper on digital audio* (IAB, 2022).

This document, lays out the fundamentals for the first time to provide platforms, publishers, agencies, creatives, planners, and buyers with the information necessary to create campaigns, defining and explaining the properties of digital audio in terms of its formats, metrics, creativity, and purchase models. This encourages this type of actions adapted to each user profile according to determining factors such as the type of content, contextual environment, affinity, place, time, listening environment, interaction capabilities, or the peculiarities of each device. When it comes to digital audio content, IAB distinguishes between live online radio, “catch-up” or delayed listening, podcasts, audiobooks, digital music, and audio press, a modality with increasingly more variants (audio articles, audio letters from the editor, audio columns, etc.) and greater range, thanks to synthetic voices generated using artificial intelligence (AI) (Balsebre; Vidal, 2021; Pedrero-Esteban; Pérez-Escoda, 2021). Finally, in terms of channels, IAB categorizes radio, music, podcast, and audiobook aggregators into one group and on-demand music platforms and playlists into another.

Such guidelines are especially necessary regarding the consumption of on-demand audio, particularly for podcasts: although their production, unlike other audiovisual sectors, is not limited by an entry barrier when it comes to cost –the recording and distribution of audios with an acceptable quality does not require large investments (Izuzquiza, 2019)– the demands of an increasingly competitive market explain the experimentation with new business models that, unlike radio but in correspondence with video-on-demand platforms (Neira, 2021), adopt subscription fees as a formula for the viability of audio production. Given their proven efficiency, branded podcasts (Orrantia, 2022) and corporate podcasts (Espinosa-de-los-Monteros, 2020) have also become increasingly well-known components of comprehensive audio branding strategies (Piñeiro-Otero, 2015c). All of these are significant signs of the power of sound in today's media ecosystem.

6. Challenges for radio in the new audio ecosystem

The migration, convergence, and conversion of media into platforms has completely changed radio production models and routines. At the time, it was observed that analog signals were gradually being integrated into the Internet and that, in addition, others emerged and gave birth to new production models built around renewed formulas in the narration of data, facts, ideas, and opinions, now supported by instantaneity, interactivity, bidirectionality, multidirectionality, and participation (**Moreno-Cazalla**, 2018).

Radio today adapts to the demands of audiences, to their needs, and to the way in which information is transferred through interwoven channels. Taking advantage of multimedia opportunities has become one of this industry's greatest challenges in the face of a convergence that alters the relationship between existing technologies, the market, genres, and audiences, in addition to modifying the model in which mass media operate and with which users process information, leisure, and entertainment (**López-Vidales; Gómez-Rubio**, 2014; **Cabrera-García-Ochoa**, 2019; **Espada**, 2019). The advancement of mobile devices, the Web 2.0, blogs, social networks, and virtual platforms, among other factors, introduces new habits, performances, and narratives that intertwine writing with mobility and associate sounds and images with immediacy (**Scolari; Establés-Heras**, 2020). With digital production systems, the medium incorporates a transformation factor and the opportunity to generate virtual loops for its discovery and commercialization.

In this scenario, there are now round-trip transformations: from the logistics of streaming inherent to the radio medium, we have moved to a stock model (**Bonet; Sellas**, 2021) owing to the momentum provided by digital archiving (**Fernández-Quijada**, 2007), and even to the hybridization of the two. This is the inverse of the process undergone by the photographic and publishing industries, which have become more liquid through the Internet. Improvements in mobile networks, as well as in apps and receiving devices, place streaming as the driving force behind the online audio revolution. Even podcasts, originally designed to be distributed in competition with streaming, are turning to streaming: initiatives such as the British station *Podcast Radio*, with continuous broadcasting through DAB+, exemplify this hybridization and transposition of models.

These are the characteristics that determine the validity of the audio media in the contemporary ecosystem: apps, the bundled distribution of audio fragments in social networks (**Gutiérrez et al.**, 2014), the adaptation of each piece to the expressive properties of certain formats (short duration, square format, ephemerality, interactive design, etc.), and push notifications to alert the user to a news item and urge immediate listening are already an intrinsic part of media habits, through which a stronger relationship with the listener has been created and, more than at any other time during its hundred years of existence, the opportunities for dialog and participation have increased. However, there are still some weaknesses and challenges in this process, which are described below.

6.1. Effective and intuitive omnichannel distribution

In the current ecosystem, there is no longer a dominant channel for the audio medium, which is moving from multichannel broadcasting –in which the signal is distributed by all Hertzian and digital broadcasting systems– to an omnichannel requirement –in which it must be present in all environments. Moreover, as the British government cautions in a study that looks into the future of the audio industry (**Gov.UK**, 2021), for the first time in a hundred years, radio is becoming partially dependent on a non-radio infrastructure. For this reason, and in view of the proliferation of listening devices and media connected to the Internet, simplified access is required for both linear broadcasting and personalized consumption (**Zumeta**, 2021).

As in the television industry, streaming audio platforms have diminished the power of Hertzian radio operators, who must now establish alliances with them in order to sustain their brand in the virtual environment. The exponential growth of on-demand consumption (music, podcasts, audiobooks, etc.) has turned these networks into new channels for content produced by –and even for– radio, that is, spaces created exclusively for these services or programs broadcast on the air, which, through these spaces, acquire new options for amortization and profitability (*Prisa Audio's* agreements with *Spotify*, *Podimo*, or *Amazon Music*, among other players, show the potential of this path). Part of the same strategy is the promotion of radio spaces as brands with their own recognizable identity, independent of the original radio station. Programs such as *Nadie sabe nada* (*Cadena SER*), at the top of the lists of podcasts with the largest audience on *iVoox* or *Spotify*, reveal a community of listener-users who do not consume radio and do not relate to this content as such. The business of the licensees of a frequency no longer focuses solely on marketing the advertising impact of linear programming but also on maximizing the performance of the content in all environments and on all devices (**Legorburu; García-González; Dorado**, 2019).

This is the case of the aptly named “smart” speakers, the first and most well-known of the impending flood of devices equipped with voice interfaces that are preferably, almost instinctively, used as radio and music players. Companies in the sector have been quick to incorporate applications or “skills,” which transcend those centered around listening: by the end of 2020, 100,000 skills to interact with the range of *Amazon Alexa* devices had been designed worldwide; the majority of these were from the United States, but there was also a significant number from the United Kingdom, India, Canada, Australia, Germany, and Spain. Many of these, however, provide solutions outside of radio, such that the potential of these devices as sources of discovery and listening for audio content should be examined in greater depth (**Pedrero-Esteban**, 2018).

6.2. More recommendation and discovery actions

The ubiquity of the smartphone on a global scale and its use as the preferred device for accessing digital leisure and entertainment was a major obstacle for radio, whose essentially invisible content has required a stronger visual identity to gain a foothold on mobile screens. This explains the use of cameras in studios and the controversial transmutation of audio language, thanks to which the radio has posted its broadcasts on channels such as *YouTube*, where pre-digital video clips (**Selva-Ruiz**, 2012) have turned this portal into background musical; *Twitch*, which has emerged as a virtual space for synchronous meetings that go beyond video games and which also allows this platform's audience to follow audio content; and social networks. In one way or another, all of these have already emerged as strategic ways to publicize programs and encourage participation and interaction with listeners: the medium must continue to experiment along these lines with narratives adapted to the specific needs of each topic and platform, especially those that connect with young audiences (**Martínez-Costa; Prata-Moreira-Martins**, 2017).

Improvements in machine learning are enabling immediate, fast, and accurate transcription of audio files –hitherto invisible in digital searches– and their identification using tags. *Google* has started to process mp3 files as texts, which allows them to appear as suggestions in the user's personalized menu. This means that SEO (web positioning) and ASO (app positioning) strategies require additional effort so that radio content, properly disaggregated and distributed on audio platforms, is suggested according to the preference history of each listener, especially on *voice user interface* (VUI) devices.

Finally, it seems advisable to test and redefine the guidelines for sending *push* notifications (*through apps*) with news or suggestions to listen to the radio, which are as effective (when they warrant their abrupt intrusion on the mobile screen) as they are pernicious (when they saturate it with irrelevant messages or are out of sync with the broadcasts) (**Pedro-Estebar; Herrera-Damas**, 2017). An alert about a breaking news event, for example, is an effective way to access the live feed if the user notices that the alerts and programming are related. In addition to this functionality, a radio broadcaster can take advantage of other marketing tools with proven effectiveness, such as e-mail newsletters with links to content that has already been broadcast or promotions and previews of upcoming releases.

6.3. New funding channels

As mentioned above, digital convergence has placed radio at a crossroads as a business that is trying to overcome the limitations of its century-old model: while Hertzian broadcast channels are losing ground to the new platforms in both spoken-word and music content, most of its revenue continues to depend on advertising formulas associated with linear and synchronous consumption, despite its loss of status in the analog environment. Already in 2016, owing to the effect of ad spots in blocks of several minutes, 71% of US drivers changed their station an average of 18 times on their commute to or from work, twice as many as with digital audio sources (*Edison Research*, 2016).

Although there has been a progressive increase in online radio as an advertising medium, the development of new content and commercial formats adapted to the digital environment has only just begun. *Pre-roll* audio, programmatic ads, immersion with 3D and 8D audio, *branded podcasts* (**Martínez-Otón; Sellas; Ortega**, 2021), and *native advertising* are being tested, but in addition to creativity and technology, it is necessary to strengthen commercial teams and rethink the mentality of an industry that insists on mass-based rates (**Ortiz-Sobrino; Castillo-Lozano; Carrazoni**, 2019) rather than on the habits of an audience for whom an overabundance of content increasingly reduces their attention span and leads them to be more selective (and restrictive).

However, the great challenge for the sector is the backing of a payment model already standardized in the audiovisual sector, thanks to the global penetration of video-on-demand platforms. It is estimated that there will be 1.75 billion active subscriptions to such services by 2027 –30% more than in 2021– driven by the growth of *Netflix*, *Disney+*, *Amazon Prime Video*, and *HBO* (*Digital TV Research*, 2022). Something similar happens with the press and payment “walls,” which are gradually establishing themselves as a sustainable and coherent model with the demand for credibility and reliability of the media in response to the emergence of fake news (**Cerezo**, 2019).

Has the audio market matured enough to introduce economic barriers to listening? What would be the trade-off that would justify them? According to the *Online Audio Study 2021* (IAB), the main reasons that users would accept such payments are “new content, in accordance with their tastes and with offline access.” In the *EncuestaPod 2022 (Podcaster@s)* survey, in a sample of 2,213 users in Spain and Latin America, 47% of listeners stated that they would pay for a subscription service to listen to exclusive podcasts (around three dollars a month); there is more willingness to pay among young people (56%), and less among those over 55 years of age (40%).

What about radio? *Bauer Media Audio*, the UK division of the German *Bauer Media Group*, already offers some of its signals with premium access in the UK, Denmark, Poland, and Norway, with monthly fees ranging from two to five euros. In Spain, the station *Baby Radio*, which has been broadcasting a programming schedule for children from zero to nine years of age over the Internet since 2012, introduced in 2015 a *premium* version with targeted content, no advertising, and the ability to download stories and songs for a cost ranging from three euros quarterly to ten euros annually. The emergence of new podcast and audiobook networks with subscription business models –such as *Audible*, *Podimo*, *Sonora*, or *Storytel* in Spain– as well as the predictions that specific fees will be introduced to access *Spotify* or *Apple Podcasts*, could prompt the introduction of paid formulas for exclusive radio productions or for those that enrich digital listening.

Such options would not only provide differential content but also improve listening conditions, such as listening ad-free or the possibility of interacting with the creators themselves.

6.4. Semantic and expressive innovation

The main differentiating element of the radio medium has been –and is– the spoken word, and its eloquence has always relied on it, through all kinds of information and entertainment genres. However, in contrast to the auditory expressiveness that the medium boasted until the last quarter of the twentieth century, the growing weight of current affairs –news and opinions– has diminished the presence of fiction productions, in which the creative, evocative, and dreamy flow of audio language, and even those of in-depth reporting, has increasingly been expressed.

The emergence and increasing penetration of podcasting are revitalizing these narratives for both stories based on reality and imaginary stories. As a result of this proposal, radio itself has begun to rethink some of its production routines, sometimes conditioned by the immediacy and not by the formal curation of its broadcasting (**Pedrero-Esteban, 2022**). Beyond the thematic breadth or the diversity of genres that radio brings to life through its programming, and assuming that digital consumption habits are no longer delimited by schedules but rather by the tastes and interests of each listener, the medium must understand that its strengths are based on the continued credibility of its brand and the careful treatment of language.

In this regard, the reflections of journalist Iñaki Gabilondo are enlightening:

“Radio, often so concerned about counting audiences and advertisers, forgets that what is really important is to tell things, to tell them in a way that listeners feel it is worth tuning in (...) We need to know what they like and what they have stopped liking, what they are interested in and what they have stopped liking, why they listen to us or stop listening to us” [“*A la radio, a menudo tan preocupada por contar audiencias y anunciantes, se le olvida que lo realmente importante es contar cosas, contarlas de forma que los oyentes sientan que vale la pena sintonizarla (...) Necesitamos saber qué les está gustando y qué les ha dejado de gustar, qué les está interesando y qué les ha dejado de gustar, por qué nos oyen o nos dejan de oír*”] (**Gabilondo, 2019**).

The constant attention of the listener is a restlessness and a capacity that must remain constant and active in front of the microphone.

Beyond the relevance acquired by the voice in the multiplicity of sound contents, technological development and its social appropriation have recovered the value of orality. Its use as a mechanism to activate smart speakers and virtual assistants has simplified our relationship with technology: if before we learned to convert our search interests into keywords as part of digital literacy, it is now technology that adapts to our language to enable natural, almost human interactions thanks to this conversational interface. Paradoxically, this drive toward orality emerges from mobile messaging services such as *WhatsApp*. Indeed, the widespread use of audio messages has so modified mediated interpersonal communication that 86% of Spaniards prefer to send a recording instead of calling on the phone (*Fundación Telefónica, 2021*). In this way, cellphones continue to support verbal communication that has become asynchronous and non-simultaneous, such as on-demand audio consumption.

As a response to this trend, albeit through patterns that resemble a social network and not private conversations, the recovery of speech as a form of interaction and dialog became evident with the emergence of Clubhouse and its numerous copies. Emerging in the midst of the coronavirus pandemic, *Clubhouse* accumulated in just a few months ten million downloads from users eager to participate with voice and hearing (they only listen and talk) in its crowded virtual rooms (**Ortega-Fernández; Padilla-Castillo; Rodríguez-Hernández, 2021**). Professional, academics and even media forums –in March 2021 *Herrera en Cope* announced its jump to this social network in parallel with the development of other native initiatives such as *Clubmorning* (**Hidalgo, 2021**)– were quick to populate and later abandon this platform. Despite its short-lived success, *Clubhouse* highlighted a need in the user community that has led big technology companies into another battle for leadership in the social audio arena: *Spaces from Twitter* (where *Cadena SER* records the program *Tuits que nunca escribí*, which can then be downloaded as a podcast), *Live Audio Rooms* by *Facebook*, and *LinkedIn Live* are examples of how the community is redefining its consumption practices and relationship with the reborn digital audio.

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