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Mapping Media Developments and Issues: Topics, Clusters, and Content of *JMCQ* Articles on Communication Technology/ Media Channels, 1935–2017

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Abstract

This study analyzed *JMCQ* articles in the specific topic area of mass communication technology and media channels, overall and across four 20-year periods. Primary topics changed from emphasizing media industry and policy issues, international issues of information freedom, audience research, and WWII media issues in early periods to more specific regulatory issues, ratings and audience analyses, macro and social issues, and media technology development issues in more recent periods. *JMCQ* serves as a treasure trove of the history of broadcast media technology and competition, policy debates, and audience interests, with a recent emphasis on more rigorous empirical analyses.

Keywords

broadcast media, centennial, *Journalism & Mass Communication Quarterly*, media history, newspaper, radio, regulation, television

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Translated Abstracts

الملخص

حللت هذه الدراسة مقالات مجلة الصحافة والاتصال الجماهيري العلمية JMCQ في مجال محدد وهو تكنولوجيا وقنوات الاتصال الجماهيري. ألقت الدراسة نظرة على محتوى هذه المقالات بشكل عام عبر أربع فترات مدة كل منها 20 عامًا بين عامي 1935-2017.

وكشفت الدراسة تحول الموضوعات الأساسية في المقالات المتعلقة بتكنولوجيا وقنوات الاتصال الجماهيري عبر السنوات، حيث ارتكزت المقالات في الفترات المبكرة على مناقشة قضايا صناعة الإعلام وقضايا السياسة والقضايا الدولية لحرية المعلومات وأبحاث الجمهور والقضايا المتعلقة بالوضع الإعلامي أثناء الحرب العالمية الثانية، بينما اهتمت المقالات الأحدث بمناقشة قضايا تنظيمية أكثر تحديدًا، وبالدراسات الخاصة بتقييمات وتحليلات الجمهور والقضايا الاجتماعية وقضايا تطوير تكنولوجيا وسائل الإعلام.

يذكر أن مجلة الصحافة والاتصال الجماهيري العلمية تُعد بمثابة كنز دفين لتاريخ تكنولوجيا البث الإعلامي والمناقشات السياسية واهتمامات الجمهور، مع التركيز مؤخرًا على الدراسات المعتمدة على التحليلات التجريبية.

كلمات مفتاحية

وسائل الإعلام الإذاعية، المئوية، الصحافة والاتصال الجماهيري، تاريخ وسائل الإعلام، الصحف، الراديو، التنظيم، التلفزيون

摘要

本研究分析了《新闻与大众传播季刊》（JMCQ）上关于大众传播技术和媒体渠道的特定主题领域的文章，总体上覆盖了四个20年时期。主要的话题由早期强调媒体产业与政策问题、信息自由的国际问题、受众研究、以及二战时期的媒体问题，逐渐转变为最近时期更具体的监管问题、收视率和受众分析、宏观和社会问题以及媒体技术发展问题。《新闻与大众传播季刊》是广播媒体技术和竞争、政策辩论以及受众兴趣的历史宝库，其最近强调更严谨的实证分析。

关键词

广播媒体，百年纪念，《新闻与大众传播季刊》，媒体史，报纸，广播，法规，电视

Résumé

Cette étude a analysé les articles du JMCQ dans le domaine spécifique des technologies de communication de masse et des canaux médiatiques, dans l'ensemble et sur quatre périodes de 20 ans. Les sujets principaux ont évolué, passant de l'industrie des médias et des questions politiques médiatiques, des questions internationales de liberté de l'information, de la recherche en audience et des questions relatives aux médias de la deuxième guerre mondiale dans les premières périodes à des questions de réglementation plus spécifiques, des analyses d'audience, des questions macrosociales

et des questions de développement de la technologie des médias dans les périodes plus récentes. JMCQ fait office de trésor de l'histoire de la technologie et de la concurrence des médias de radiodiffusion, des débats politiques et des intérêts de l'audience, tout en mettant récemment l'accent sur des analyses empiriques plus rigoureuses.

Mots clés
médias du secteur de la radiodiffusion, centenaire, Journalism & Mass Communication Quarterly, histoire des médias, journal, radio, réglementation, télévision

Абстракт
В этом исследовании были проанализированы статьи JMCQ в конкретной тематической области технологий массовых коммуникаций и медиаканалов в целом и за четыре 20-летних периода. Основные темы изменились с акцента на медиаиндустрию и вопросы политики, международные проблемы свободы информации, исследования аудитории и проблемы медиа во время Второй мировой войны в ранние периоды на более конкретные вопросы регулирования, рейтингов и анализов аудитории, макроэкономических и социальных вопросов, а также вопросов развития медиатехнологий в более поздние периоды. JMCQ служит сокровищницей истории технологий вещательных СМИ и конкуренции, политических дебатов и интересов аудитории, с недавним упором на более строгий эмпирический анализ.

Ключевые слова
радиовещательные СМИ, столетний юбилей, Journalism & Mass Communication Quarterly, история СМИ, газета, радио, регулирование, телевидение

Resumen
Este estudio ha analizado los artículos de JMCQ en el área temática específica de la tecnología de la comunicación de masas y los canales mediáticos, en general y a lo largo de cuatro períodos de 20 años. Los temas principales pasaron de enfatizar cuestiones relacionadas con la industria y las políticas de los medios, cuestiones internacionales de libertad de información, investigación sobre audiencias, y cuestiones sobre los medios de la IIGM en los primeros períodos, a cuestiones más específicas de regulación, calificaciones y análisis de audiencia, cuestiones sociales y macro, y cuestiones sobre el desarrollo de la tecnología de los medios de comunicación en períodos más recientes. JMCQ sirve como tesoro de la historia de la tecnología y la competencia de los medios de radiodifusión, debates sobre políticas, e intereses de la audiencia, con un reciente énfasis en análisis empíricos más rigurosos.

Palabras clave
medios de difusión, centenario, Journalism & Mass Communication Quarterly, historia de los medios, periódico, radio, regulación, televisión

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Academic journals, like the fields and areas of specialization they publish, evolve gradually and reflect the concerns, criteria, and practices of their time. With the standardization of academic disciplines over the last century and consensus around what defines rigorous knowledge, refereed journal article writing has become a fairly regimented and academic endeavor. This wasn't always the case. *JMCQ* started out as *The Journalism Bulletin* in 1924, changed to *Journalism Quarterly* as of *4*(4), Jan 1928, and then to *Journalism & Mass Communication Quarterly, 71*(1) in 1995. In the early days, research summaries and informed essays about new media channels were just as likely to be written by industry representatives, research institute analysts, and journalists as they were by full-time academics. Today, all the *JMCQ* articles on mass media technology are authored by academics. While this shift signals heightened scholarly rigor, it also reflects a decrease in types of authors and in literary and popular writing style that came with early reflections and state of the art essays about industry trends and even media-related developments abroad.

The research question motivating this special issue article is: What is the overall, and changing, focus of *JCMQ* articles from 1935 through 2017, with respect to the topic of Communication Technology/Media Channels? This study does not present a comprehensive literature review of that topic but rather focuses on the articles identified via topic modeling by the special issue editors (see Kim et al., 2023). Even within *JMCQ*, this topic focuses primarily on mass/broadcast media, and thus does not include digital/online/mobile media technologies, policies, or research.

Resonating with the large-scale topic modeling approach that this special issues applies, we conduct both direct and indirect forms of textual analysis of the articles, both across and within time periods. Direct text analysis was performed through modeling topics (via factor analysis) and distinguishing articles (via *k*-means clustering) using the co-occurrence of *n*-grams across articles. Indirect text analysis was applied via content analysis of the articles based on an *a priori* but iteratively revised coding scheme. Thus we move from general topics to prototypical articles to specific relevant content, as a means of characterizing the foci of these *JMCQ* articles. The analyses provide a detailed look at news and mass media technology developments, important industry debates, trends, and scholarship from 1935 to 2017, overall and within time periods.

The Articles

The *JMCQ* special issue editors (Kim et al., 2023) provided a set of 127 articles, from 1935 to 2017, identified as Topic 9 or Communication Technology/Media Channels, based on their topic modeling of all articles in the journal over that time period. After

removing 35 book reviews, 6 research-in-brief pieces, 2 annotated bibliographies, a foreign communications summary, an educators' forum, and general quotes (common at the end of early articles), 82 articles remained for the topic and cluster analyses. We further dropped 3 short wartime communications for the content analysis. We refer to the entire set (1935–2017) as *All*; to assess changes over time, four (approximately equal-sized) 20-year *periods* were identified by the last two digits of their inclusive years, as *35-49*, *50-69*, *70-89*, and *90-17*.

Word Frequency and Topics

Method

We first prepared a spreadsheet with each article's ID, year, time period, and text. Then we applied MEH (Meaning Extraction Helper; R. L. Boyd, 2018) to *All* and then to each of the *periods*. MEH removes stop words, and lemmatizes and stems all the remaining words, from each article's text, resulting in a reduced set of *n*-grams, or individual standardized substantive words, for each article. We set MEH to remove the lowest-frequency words after each set of 2 articles, and keep the 200 most frequent *n*-grams in *All* and in each *period*. Table 1 provides descriptive statistics for articles and n-grams.

MEH creates two primary output files. The first (*n*-gram *text*) lists all of the *n*-grams in the order they appeared in each article (i.e., a given *n*-gram may occur one or more times in each row). The second (*n*-gram *number*) is a matrix with the article IDs down the first column, each unique *n*-gram across the columns, and the total number of times each *n*-gram occurs in each article as the cell values. These two types of files from *All* and from each *period* provide the bases for the topic and word cluster analyses.

Results

The *n*-gram *text* files from *All* and each *period* were input separately to a word cloud generator (Free Word Cloud Generator, 2023), using the program's maximum limit of the most frequent 100 words. Figure 1 visually displays the *n*-grams in sizes proportional to their frequency across the *All* articles (the four period word clouds are available from the first author). Given the emphasis of the Communication Technology/Media Channels topic in *JMCQ* on the early years of mass media, the most frequent words are radio, station, news, broadcast, program, television, media, newspaper, public, service, and interest.

To identify general topics, we applied principal components analysis via SPSS to the *n*-gram *number* file. Because of the large number of words, many dimensions had eigenvalues over 1.0. For parsimony, interpretability, and consistency, we applied the following criteria for retention and reporting: positive loadings of .40 or above; in the few cases where a word loaded more than .40 on multiple dimensions, only use the dimension where it loaded highest; and iteratively reduce dimensions using forced extraction until cumulative variance explained just over 50%. This approach identified the following number of factor topics for each period: *All*=13; *35-49*=5; *50-69*=6; *70-89*=6;

Table 1. Descriptive Statistics for n-Grams Per Period and All.

	Articles	*n*-grams			
Years	*N*	*M*	*SD*	Min	Max
35–49	23	2,801.9	1,385.5	521	5,226
50–69	20	3,255.9	1,341.3	769	5,960
70–89	23	4,429.0	1,054.4	2,315	6,163
90–17	16	4,736.3	1,206.5	1,372	5,579
All	82	3,746.5	1,467.5	521	6,163

Note. *N*-grams are standardized (lemmatized, stemmed, and stop-worded) forms of words from the original articles.

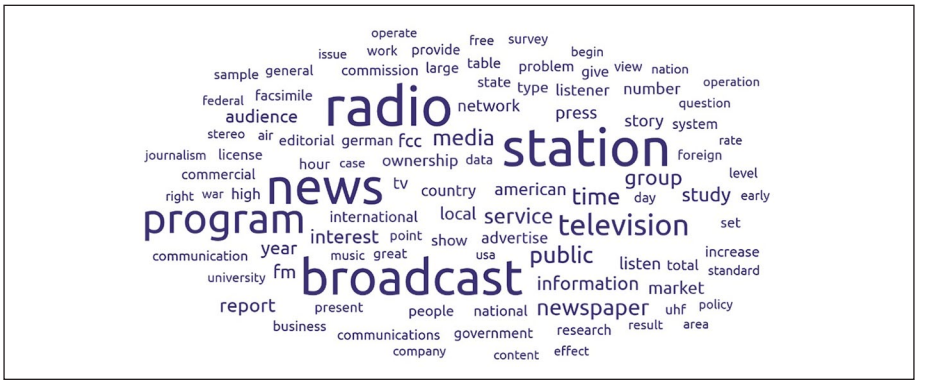

Figure 1. Word Cloud, All 1935–2017

90-17=5. The factors represent the primary topics for *All* and each *period*, respectively. Table 2 shows the results for *All*, while Table 3 presents the results for each period.

The factor-based topics across for *All* are (1) national and international issues and media transmission; (2) programming (local, affiliate, network); (3) media technology and industry developments; (4) station ownership and markets; (5) audience viewing and ratings for news and editorial content; (6) licensing and minority broadcasting issues and data; (7) FCC policy issues; (8) political issues associated with WWII and Germany; (9) use of media for war communications, especially between US broadcasters and the BBC; (10) content analysis research on news items and stories; (11) radio listener surveys, esp. music-related; (12) mass media and cultural programming; and, (13) commercial media sales and advertising.

The topics for each of the separate four *periods* are fewer but more specific. They show a shift from media industry, advertising, international and national media issues, along with audience-related concerns (especially regarding the new medium of radio) in the first period, to more specific regulatory issues, social issues, retrospective

Table 2. Topics and High-Loading Words (in Decreasing Loading Order Within Dimension) for All.

Words indicating topics (in decreasing factor loading order) All: 1935–2017	Range of high loadings	% Var
1. Nation, USA, international, country, material, problem, convention, organization, transmission, freedom, work, place, state, right, UNESCO, information, general, American, plan	.82–.42	5.5
2. Affiliate, program, hour, type, category, total, offer, time, serve, network, present, UHF, public, VHF, interest, local, percentage, entertainment, show, result, note	.87–.42	5.4
3. Development, FM, grow, begin, major, industry, year, communications, york, early, medium, change, receiver, future, facsimile, set, operation, develop, increase	.76–.47	5.1
4. Ownership, group, TV, number, reach, large, station, market, table, continue, base	.90–.42	4.6
5. Rate, editorial, newscast, effect, mean, audience, limit, view, difference, opinion, control, indicate, rating, significant	.78–.46	4.1
6. Minority, license, communication, business, small, service, data, media, system, broadcast	.83–.50	3.8
7. Federal, broadcasting, broadcaster, commission, FCC, under, establish, air, case, operate, power, policy, national	.63–.42	3.7
8. West, East, German, Germany, political, provide	.91–.51	3.4
9. Office, foreign, see, BBC, wireless, write, company, great, war, consider	.64–.41	3.4
10. News, item, story, study, content, analysis, editor, research, university	.75–.40	3.3
11. Listener, music, listen, radio, survey, respondent, hear, sample	.65–.42	3.2
12. High, low, religious, mass, viewer, educational	.57–.40	2.9
13. Director, sale, commercial, staff, member, advertise	.69–.48	2.8

Note. Final run forced 13 factors; varimax rotation; cumulative variance explained: 51.2%. UHF = ultra high frequency; VHF = very high frequency; FCC = federal communications commission.

histories of the early years of developing media technologies (e.g., FM radio, satellite broadcasting), and continuing into the modern era with more academically rigorous audience-based research in the most recent period.

Word Clusters and Prototypical Articles

Method

To identify prototypical articles for *All* and each *period*, we applied *k*-means clustering using the SPSS datasets. These results distinguish clusters of articles based on their

Table 3. Topics and High-Loading Words (in Decreasing Loading Order Within Dimension) for Each Period.

Words Indicating Topics (in Decreasing Factor Loading Order)	Range of high loadings	% Var
1935–1949		
1. Broadcasting, development, fm, receiver, year, license, TV, viewer, standard, local, FCC, level, media, early, operation, York, broadcaster, station, system, develop, hour, facsimile, music, public, market, future, community, operate, great, NBC, increase, set, medium, industry, sale, television, present, advertise, offer, service, grow, effect, small, consider, category, picture, business, see, begin, commercial	.40–.93	15.3
2. UNESCO, educational, support, information, free, general, freedom, material, problem, serve, provide, member, international, plan, establish, commission, work, train, mean, nation, mass, area, organization, convention, limit, country, concern, available, special, percent, East, under, communications, communication, national, receive, journalism	.42–.92	11.9
3. Listen, rating, opinion, analysis, view, audience, program, large, listener, rate, question, base, type, entertainment, research, network, difference, point, day, show, issue, broadcast, news, survey, table, radio, item, period, change	.41–.90	10.3
4. German, political, state, foreign, policy, government, reach, content, Germany, story, time, minority, USA, paper, case, people, department, director, American, office, war, staff, country, important, press, continue, give, write, daily, service, fact, news, issue, editorial, source, interest, nation, right, present	.40–.84	9.7
5. Call, indicate, number, sample, respondent, study, economic, group, note, city, telephone, percentage, result, significant, total, place, survey, table, set, question, area, week, newspaper	.41–.82	7.5
Note: Final run forced 5 factors; varimax rotation; cumulative variance explained: 54.7%		
1950–1969		
1. Government, nation, political, freedom, information, usa, right, convention, country, problem, transmission, international, economic, support, foreign, state, press, east, under, mean, establish, special, power, small, national, work, issue, organization, event, communication	.43–.88	10.5
2. University, research, effect, level, study, content, analysis, significant, item, picture, report, material, newscast, difference, case, NBC, story, news, survey, order, York, present, interest, source, available, write, media	.49–.94	10.3
3. Show, week, data, American, viewer, Germany, give, German, rating, West, sample, see, place, program, individual, appear, view, table, television, technology, TV, area, agency	.46–.92	10.1
4. Affiliate, FM, ownership, facsimile, daily, newspaper, station, number, control, standard, increase, total, minority, year, company, period, FCC, operate, percent, operation, broadcasting, paper, war, group, air, large, development, grow	.43–.97	9.9
5. Advertise, rate, association, business, opinion, respondent, sale, result, low, question, general, concern, category, receive, note, public, offer, consider, commercial, hear, federal, commission	.41–.82	7.8

(continued)

Table 3. (continued)

Words Indicating Topics (in Decreasing Factor Loading Order)	Range of high loadings	% Var
6. Continue, day, medium, begin, set, network, radio, hour, audience, great, important, music, people, entertainment, listener, call, reach, develop, war, major, broadcast, base, receiver, national	.42–.82	7.2
Note: Final run forced 6 factors; varimax rotation; cumulative variance explained: 55.8%		
1970–1989		
1. FM, stereo, year, begin, major, grow, federal, industry, operation, change, medium, receiver, increase, national, system, development, set, power, communications, association, commission, call, audience, future, early, music, FCC, area, fact, order, York, sale, business	.40–.84	10.1
2. Material, transmission, place, right, convention, USA, UNESCO, problem, international, wire, communication, establish, nation, organization, country, issue, event, develop, standard, freedom, agency, free, mass, point, control, facsimile	.42–.92	9.7
3. Research, question, listen, listener, respondent, hear, radio, consider, rate, analysis, religious, news, train, indicate, low, general	.51–.67	8.8
4. See, department, state, press, war, foreign, office, BBC, wireless, great, service, support, university, appear, write, work, paper	.40–.83	8.5
5. Affiliate, total, program, offer, category, picture, type, hour, present, man, broadcaster, time, serve, show, local, result, note, interest, percentage, entertainment, UHF, content, network, public, policy, VHF, period	.41–.90	9.3
6. political, provide, East, German, West, Germany, important, available, operate, television, government, receive, broadcasting, daily, under, high, economic, broadcast, mean	.41–.73	6.7
Note: Final run forced 6 factors; varimax rotation; cumulative variance explained: 52.2%		
1990–2017		
1. Data, service, communication, small, minority, table, business, ownership, type, category, license, content, media, large, source, broadcast, question, system, available, analysis, entertainment, sample	.40–.81	10.6
2. Rating, newscast, editorial, rate, mean, audience, difference, limit, opinion, group, indicate, effect, director, present, significant, show, see, concern, control, view, affiliate, survey	.51–.94	10.4
3. Public, educational, policy, continue, plan, member, agency, reach, broadcasting, national, political, commercial, support, serve, provide, program, grow, year, receive, government, place, change, community, nation, issue, under, broadcaster, operation, organization, association, federal, American, power, state	.41–.87	10.4
4. Company, wireless, wire, press, telephone, office, consider, begin, war, network, future, set, man, German, early, important, appear, newspaper, general, call, transmission, economic, develop, great, event, give	.41–.93	10.2
5. Information, high, people, individual, respondent, increase, low, research, story, study, work, result, note, mass, item, base, music, religious, viewer, point, medium, listener	.41–.89	9.4

Note. Final run forced 5 factors; varimax rotation; cumulative variance explained: 51.0%. FCC = federal communications commission; UHF = ultra high frequency; VHF = very high frequency.

shared frequency of the 200 *n*-grams in *All* and in each *period*. This form of clustering is unsupervised, working iteratively to group articles into distinct clusters, with at least two articles in a cluster. The number of clusters that were required to converge on a solution requiring no more iterations were: *All* = 5; *35-49* = 4; *50-69* = 4; *79-89* = 3; and *90-17* = 3. The output includes a measure of how close each article is to the center of its cluster. The closest article for each small cluster (along with a mid-level article for large clusters) is a good representative, or *prototype*, of the respective topic cluster.

Results

Table 4 for *All*, and Table 5 for each period, list the specific words with significantly different mean Euclidean distances from the cluster centers (i.e., words that distinguish the clusters), the article clusters, prototypical articles (closest to the center of each respective cluster), and a brief summary of those articles.

The main topics of the article clusters across all periods (the *All* set) are: Technical and media developments and standards, FCC and media policy, stations and markets, local stations and programming, US and international media coverage, news, and audience research. Most of the articles ($n = 63$) reside in a cluster about audience (primarily radio), with Paulu (1955) and Mindak (1957) as prototypical articles. The second cluster ($n = 2$) addresses US TV content, access, and audience preferences internationally (Browne, 1968). The third ($n = 6$) and fourth ($n = 2$) clusters concern policy, the former especially media cross-ownership (H. H. Howard, 1983) and the latter about FCC standards for FM and AM stereo (Huff, 1991). The last cluster ($n = 9$) focuses on accounts of press and radio competition for news, largely historical but some written by authors at the time (Moore, 1935).

Each *period* provides more detailed topics along with their prototypical articles. For Period *35-49*, those are: Diverse media developments, broadcasting, policy issues such as licensing and standards, commercial media and advertisers, news, audience, (press and wire) associations, and (broadcast) networks. Period *50-69* includes: Audience research, programming, radio, and news. Period *70-89* article clusters are distinguished by: Macro issues such as government, industry, ownership, policy, media growth, FM stereo, audiences, sales and markets, and newspapers. Finally, article clusters in Period *90-17* are significantly distinguished by: Policy, public service, audience, media ownership, and research.

Content Analysis of Articles

Method

Here we turn to a more contextualized but indirect method for describing the focus of these articles: content analysis. The co-authors developed coding categories and operationalizations from other content analyses of published mass media research (Bucy & Evans, 2022; Evans & Bucy, 2010) as well as from a general overview of the articles, allowing for adaptation based on each round of coding. Each article was coded for

Table 4. Article Clusters for All: Distinguishing Words and Prototypical Articles via K-Means Clustering.

Cluster, (Cluster Size), Prototypical Article	Words that Distinguish Clusters, and Prototypical Articles
1935–2017	
	Words: Show, large, system, research, begin, story, increase, country, station, number, group, news, American, change, communications, major, FCC (Federal Communications Commission), commission, federal, industry, market, TV, reach, television, item, FM, ownership, standard, table, East, stereo, West, VHF (very high frequency), UHF (ultra high frequency), German, Germany, study, political, grow, newspaper, operate, provide, local, total, data, staff, analysis
Cluster 1 (63)	Audience research: Radio.
Paulu (1955); Mindak (1957)	Paulu (1955) reported audience research comparing BBC and US radio television listening and viewing preferences, finding similar patterns, especially favoring escape and entertainment content. This was particularly intriguing given the non-commercial, monopoly BBC's offering of more intellectual and cultural programming, indicating that decades-long efforts by the BBC to promote cultural or "serious" programming had little effect. Mindak's (1957) article is about the changing nature of radio, after the introduction of TV, from an advertising perspective. He analyzed the resurgence of radio in the 1950s, facilitated by networks, independent stations, and increased attention from advertising agencies. In response to the advent of television, radio networks tailored content to meet advertisers' needs and segmented audiences' preferences, and offered much more flexible and short-term spot advertising packages; independent stations emphasized their communities and local personalities; and the article discussed specific attributes (what we would now call affordances).
Cluster 2 (2)	US TV content, access, and audience preferences internationally.
Browne (1968)	Browne (1968) analyzed program schedules and content of US commercial programs in some European countries, stimulated by the increased joint interest in and awareness of American and Europeans due to WWII, increased tourism, and greater media exposure. Based upon international program sales representatives, media ratings services, and US Information Agency polls, despite general criticisms and concerns to the contrary, US programming did not dominate, and generally was perceived as providing a credible and favorable view of American life in the mid-1960s.

(continued)

Table 4. (continued)

Cluster, (Cluster Size), Prototypical Article	Words that Distinguish Clusters, and Prototypical Articles
Cluster 3 (6)	Policy: Media cross-ownership.
H. H. Howard (1983)	H. H. Howard (1983) described 1982 data and trends on TV ownership and viewing households, as an update on the state of the FCC's 7-7-7 rule limiting AM, FM, and TV station cross-media ownership in the same market. Group TV station ownership in general continued to increase, though very few owned the maximum of 7 stations, and most reached only a very small percentage of households. Joint ownership of local newspapers and TV stations declined, but rapidly increased in larger or separate markets.
Cluster 4 (2)	Policy: FCC standards for FM and AM stereo.
Huff (1991)	While Huff (1991) primarily described the history of the FCC's decision (1961) to approve a FM radio stereo standard but not for AM stereo (1982), the article is also a case study of the decline in FCC regulation. It also probed deeply into the FCC regulatory process and its stance as not supporting the commercial success of any particular system or vendor, even though these two decisions fostered FM and stymied AM radio.
Cluster 5 (9)	Media competition for news: Press and radio; history.
Moore (1935)	Moore (1935) provided a personal and industry history essay (framed in the language of war), motivated by the recent introduction of radio, on whether press and radio could or should both provide breaking news. The article was informed by issues of press freedom, competition, the development of radio news staff, separate or joint news bureaus and associations, and the impending introduction of news facsimile and TV.

Note. Words (ordered by increasing p value) with significantly different Euclidean distances to cluster centers, ANOVA, $p < .005$. Prototypical entries are the author closest to each-means article cluster center. However, we list two authors on the first cluster, because of the very large size of the cluster; we selected the second author from mid-way down the distance ranking. ANOVA = analysis of variance.

Table 5. Article Clusters for Each Period: Distinguishing Words and Prototypical Articles via K-Means Clustering.

Cluster, (Cluster Size), Prototypical Article	Words that Distinguish Clusters, and Prototypical Articles
1935–1949	
	Words: Broadcasting, system, year, broadcaster, newspaper, news, york, receiver, development, market, community, operation, license, facsimile, public, develop, FM, standard, newscast, daily, paper, local, increase, audience, station, day, early, industry, show, sale, TV, viewer, radio, see, small, story, advertise, great, network, picture, set, FCC, association, media, commercial, music, event, hour, special, point, report, ownership, issue, level
Cluster 1 (2)	Media developments: TV, FM, Facsimile; history
Beville (1948)	Beville's (1948) conference keynote described problems and prospects of then new media: TV, FM, and, yes, broadcast facsimile. The article provides a historical overview and summary of usage and purchasing statistics of the three media as of the late 1940s. It is particularly interesting to read an overview of the very early stages of what was then possibly revolutionary "new media" and their associated networks—and the use of that term back in 1948. This article, as do some others, refers to common and unique characteristics (what we now call affordances) of these new media compared to existing media such as newspaper, silent movies, and AM radio. The article would be a great reality-check for current research and popular press covering new media trends and social effects as somehow totally unique and novel. Beville ends with five challenges: technical, production, and artistic skills; economic (primarily advertising, with audience research) support for new media; FCC regulation; impacts on existing media; and changing socio-economic conditions.
Cluster 2 (5)	Media competition, history: Press and radio.
Barnett (1943)	Barnett (1943) also discussed historical and developing relationships (both cooperative and competitive) between the press and radio concerning news coverage (see also Moore, 1935). He complemented this discussion with programming and audience statistics on the tremendous growth in news coverage. Lurking in these kinds of articles is a sense of different cultural and professional values of print vs. radio professionals, along with some reference to differences in media affordances (such as how news presentation varies by print vs. radio).
Cluster 3 (9)	War Communications.
Hammargren (1940)	Hammargren (1940) compared local and national advertising revenues for two newspapers and two radio stations in Denver, to show that, indeed, radio was becoming a competitive threat to newspapers, though at that time only with respect to national advertising.
Cluster 4 (5)	Media developments: Radio trends and challenges.
White (1946)	White (1946) also focused on developments, trends, historical and even humorous anecdotes in radio news, moving from WWII coverage into peacetime. One point emphasized is that audience interest in radio news maintained or even surpassed that during the war, and that news coverage then turned to more US topics. Another is the looming challenges and benefits to news coverage from new media, such as FM, TV, and facsimile, again providing passing comments on varying media attributes. Finally he discussed criteria for, and pressures on, radio news correspondents, and the importance of a free and democratic radio industry.
1950–1969	
	Words: Table, data, individual, week, program, appear, total, high, rating, listen, percentage, area, type, show, radio, news, group, large, city, view, set, newscast, see, period

(continued)

Table 5. (continued)

Cluster, (Cluster Size), Prototypical Article	Words that Distinguish Clusters, and Prototypical Articles
Cluster 1 (10)	Media developments: Forecasting radio, TV, video recording.
Wiebe (1955)	Wiebe (1955) speculated on developments in the nature and uses of media equipment over the then forthcoming 20 years. In terms of equipment, he referred to sales figures, transistors, printed circuits, reception, sound quality, audio recorders, videotape, digital filming, international TV transmission, and color TV. In terms of uses and social implications, Wiebe speculated on the continuation of radio in the face of TV competition, radio advertiser audience research, the rising popularity of radio news, the increased specialization of radio content for small targeted audiences, television journalism, freedom of the press applying to all media, increasing emphasis on journalism ethics in mass media, the challenge to accuracy raised by editability of all media, and even brainwashing via manipulating media.
Cluster 2 (7)	Radio practices.
Haskins (1952)	Haskins (1952) surveyed broadcasting practices in non-metropolitan radio stations in Georgia that could affect program policy and quality. He evaluated most of the practices and relationships positively, including coverage of topics that the station managers themselves may not approve of, and reporting of local, outlying community, and farm news as well as providing public discussion programs. However, he noted some limited access to local governmental entities, and reductions in programming staff.
Cluster 3 (3)	Radio audience research.
Hileman (1953)	Hileman (1953) reported results from analyses of young (6-17) people's week-long radio listening diaries in a mid-West city. This covered very detailed tables of time spent listening and program preference, by gender, age, day, time period, urban/rural location, and 11 categories of 25 programs. The author particularly emphasized the benefits and validity of diary studies over survey or recall studies for these kinds of data.
1970–1989	
	Words: Begin, increase, receiver, change, association, major, federal, national, FM, stereo, station, FCC, commission, city, market, audience, set, power, operation, music, area, large, industry, newspaper, table, year, news, early, data, system, ownership, number, medium, grow, group, period, give
Cluster 1	Policy: Media ownership and public interest coverage.
Wirth & Wollert (1976)	Referring to policy concerns about the effects of media concentration on content diversity and quality, Wirth and Wollert (1976) analyzed a 1973 FCC TV programming report to compare coverage of news and public affairs across newspaper-owned stations group-owned stations, network affiliates, and VHF (very high frequency) stations. The study is a good example of integrating multiple industry data sources for an integrated analysis. Interestingly, they found that group- and multi-media owned TV stations provided more than the FCC required time to such programming, and either similar or greater figures than network affiliates or VHF stations, though naturally non-group-owned stations provided more local programming.
Cluster 2	Policy: Self-regulation.
Linton (1987)	Linton (1987) compared advertising and programming, by both networks and stations, from the time the broadcasting industry followed the "Code" to four years after the National Association of Broadcaster's "Code" was removed in 1982 due to anti-trust action. Networks then strengthened their internal Standards and Practices (S&P) units (i.e., self-regulation). Based on interviews, this article described the philosophy and working concepts of S&P staff; problematic advertising content; criticisms and pushback from citizen groups and Congress; issue or opinion advertising; problematic programming areas; and docudramas. It also summarizes local station decision-making practices, as they no longer had Code lawyers to refer to. These include the existence of written guidelines or reference to the former Code, and dealing with advertising and programming content decisions, such as political broadcasting, and movies. Linton concluded that not much changed at the network level, but the local station level now had to manage and make decisions about many more issues than before, including dealing with citizen group pressures.

(continued)

Table 5. (continued)

Cluster, (Cluster Size), Prototypical Article	Words that Distinguish Clusters, and Prototypical Articles
Cluster 3	Policy: FM radio; history.
Sterling (1971)	It is not difficult to understand why Sterling (1971) represents a unique cluster: he described in considerable detail the history, development, and growth of FM radio (and receiver sales) in the 1960s, due to a variety of influences, such as overcrowding and technical limitations of AM radio, FM subcarrier subscription music services, stereo multiplexing, an FCC ruling on non-duplication of programming, the leveling off of TV growth, syndication, more orderly classification of FM stations, greater programming appeal, nascent FM audience research, and advertiser interest. Constant pressure and regulations by the FCC were a major driver.
1990–2017	
	Words: Show, news, difference, agency, federal, commission, continue, effect, affiliate, broadcasting, serve, study, major, audience, mean, communications, FCC, local, director, group, public
Cluster 1 (3)	Policy: Radio content and the public interest, history.
Smith (1994)	Smith (1994) described and evaluated the 1935 FCC efforts to influence broadcasters to program in the public interest (in particular, removing fraudulent medical radio advertising). This is an insightful and even suspenseful view into the history, politics, and commercial, governmental, advertiser, and radio industry stakeholders involved in this, eventually derailed, effort to define and apply the public interest component of the 1927 Radio Act and the 1934 Communications Act, itself grounded in earlier actions such as the Pure Food and Drugs Act and the Federal Trade Commission. It is a special case of the general pressure of advertising, marketplace, and political incentives on pro-social policy, as well as of precedent for future FCC public interest investigations and regulations.
Cluster 2 (3)	Research: Responses to radio news.
Carpentier (2008)	Carpentier (2008) reviewed the theoretical foundations and prior research of, and then experimentally tested, the "informational utility model" (highlighting magnitude, likelihood, and immediacy utilities), using participants' retention and relevance of radio news stories as outcome measures, finding mixed support. This study is couched in the importance of understanding what influences potential audience members to decide to continue listening to, recall information from, or rate as relevant, a radio news story, which does not have a persistent image, text, or headline, and which much compete with a wide variety of other personal, social, and media stimuli. This is a by-now traditional research paper.
Cluster 3 (10)	Policy: Unlicensed (pirate) radio broadcasting.
Jones (1994)	Jones (1994) analyzed programming by (mostly low-powered) unlicensed broadcasts in the United States. Using data from a variety of print and online sources, Jones describes the frequency band and program format of unlicensed radio stations. He concluded that most unlicensed stations probably targeted audiences like shortwave and amateur radio fans, and only a few stations were politically oriented (at least in the early 90s). Jones reported that the most frequent format was pop and rock'n'roll music, so such stations did not constitute an alternative programming form, but, rather, did affect spectrum use and access, which thus was the more justified basis for FCC control, rather than a concern over content.

Note. Words (ordered by increasing p value) with significantly different Euclidean distances to cluster centers, ANOVA, $p < .05$: Prototypical entries are the closest article to each k-means article cluster center, within each Period. S&P = standards and practices. ANOVA = analysis of variance; FCC = federal communications commission; AM = amplitude modulation; VHF = very high frequency.

manifest content of publication year and page length, and latent content of author type, two main topics, main theory, two data sources, research approach, main study design, analytical approach, main and up to three additional communication technologies/media mentioned, and academic indicators. (The final Codebook is available from the first author.)

We began by familiarizing ourselves with the first article from each of the four time periods, then compared, discussed, and revised the coding. A challenge arose due to the uneven nature of earlier articles (often shorter, without citations, covering industry trends, conference reports, or personal reflections, with several foci). Given this variability, categories initially used for coding were kept intentionally broad. We then read and analyzed 11 articles across the four periods through three rounds. At each round, we compared our codings, discussed disagreements, and revised the operational definitions where necessary. Our interpretations and operationalizations converged well by the end of the third round.

After each set of codings, all agreements of specific codes for each instance were recoded in the main spreadsheet as 1 for each coder, and disagreements as 0 for one coder (based on the lowest code value) and 1 for the other. Although we computed standard measures of reliability, percentage agreement was selected as the most appropriate criterion for establishing sufficient inter-coder reliability (all measures courtesy of Freelon's [n.d.] ReCal2). Overall, average agreement was 91.8%. The only two problematic codes were second topic (45.5%, with first at 100%), and second media mention (63.6%, with first at 100%). In those disagreements, we agreed that all the choices were justifiable, so discussed and decided on the most specific example in each instance.

We then developed and applied general coding procedures (see the Codebook for more details), including adding several new substantive codes. We then each coded the same subsequent respective sets of 10 articles within seven rounds, with each of those articles distributed across the four time periods. The few disagreements that arose were discussed until a consensual coding decision was obtained; these emphasized a stronger focus, a more specific instance, or a less frequent and thus more unique instance.

Results

Table 6 presents the percent agreement for each time period for codes with one choice (author type, theory, research design general and specific, academic indicators), and Table 7 for codes with two or more choices (topic, data, analysis, and media technology). The following sections summarize results and provide examples for each of the content analysis areas.

Communication Technology/Media Channels

Trends. Early *JMCQ* articles on mass media technology (i.e., *35-49*) highlighted cross-media competition, particularly between newspapers and radio. FM radio, AM stereo, teletype, facsimile delivery of newspapers, color and satellite broadcasting,

high-definition television, and digital news platforms are just a few of the technologies analyzed. Articles emphasized international media flows in the WWII and Cold War eras as the democratic way of life was under threat and depended on robust dissemination of information. With the destruction of Europe and rise of the Cold War following WWII, American and British media leadership played a vital role through the United Nations (via its cultural and scientific arm, UNESCO) in forming a new world information order that championed the free flow of news over propaganda on a global scale (such as through Radio Free Europe or international shortwave radio). The need for journalism education and media literacy training for propagandized and information-starved populations (such as through UNESCO commissions or the BBC) was fundamental during and after WWII.

Concerns about news professionalism and advertising ethics present in the earliest period of articles shifted to studies about programming on radio and television and, with that, ratings or audience analysis. In the latter periods (i.e., *70-89*, *90-17*), articles emphasized policy and regulatory issues that attended the growth of the broadcast media system. In later years, historical analyses of media technology became increasingly evident, reminding readers of the changes that had occurred and critical episodes from bygone eras.

Reflecting these trends, technology mentions in early articles (*35-49*) at first emphasized newspapers and radio (stations, networks, and AM/FM), then gradually incorporated television (stations, networks, and UHF/VHF), particularly in *70-89*, which could be described as the heyday of television research in this topic area. Early studies and research commentaries about media technology in the journal focused largely on the practice of journalism and the challenge that the emergent medium of radio posed to the print press—to the point of questioning whether radio stations should have the right to report the news at all, given their unfair advantage of instant delivery or what was called "flash news." These concerns were somewhat mitigated by newspaper group investment in radio and the unprecedented need for news brought on by WWII. Prior to the war, articles about broadcasting largely addressed issues related to the programming, advertising, and regulation of radio while after the war attention turned increasingly to television but continued to feature radio as well. Broadcast media policy has been a consistent focus of the journal ever since.

Media Technology History and Forecasting. While the rise of digital communication technologies has been acknowledged with the term "new media" (Rice & Associates, 1984), that and similar terms were used three-quarters of a century ago: for example, "new media" (Beville, 1948), television as a "new medium of communication" (Cassirer, 1949, p. 278), and "new communication technologies" (Rogers, 1952, p. 59). The introduction of new communication technologies was often greeted with great optimism in the pages of the journal: "The new media present us with unrivaled opportunities to overcome public ignorance and apathy concerning crucial issues of our times" (Beville, 1948, p. 11). The pages of *JMCQ* have also hosted fascinating analyses of the ebb and flow of competitive dynamics between the emerging medium of radio and the traditional print press concerning issues of timing, selling, sharing, or withholding of

Table 6. Percentage for Each Period for Content Analysis Codes with One Choice.

Years, Number of Articles Codes	35–49 (*n* = 20)	50–69 (*n* = 20)	70–89 (*n* = 23)	90–17 (*n* = 16)
Author type				
Government	10.0	5.0	—	—
Journalist	5.0	10.0	4.3	—
Media industry representative or executive	35.0	5.0	—	—
Academic	40.0	75.0	95.7	100.0
Researcher analyst institution, foundation, company, industry	10.0	5.0	—	—
Theory				
None	70.0	65.0	30.4	12.5
Affective expansion	—	5.0	—	—
Critical theory—capitalism	—	—	4.3	—
Democratic theory	10.0	5.0	—	—
Diffusion of innovations	—	—	—	6.3
Double-action internal news flow	—	5.0	—	—
Informational utility model	—	—	—	6.3
International news flow	—	—	4.3	—
Media credibility credulity	—	—	4.3	—
Media regulation (general)	—	—	—	6.3
Persuasion	—	5.0	4.3	6.3
Policy—cross-ownership	5.0	—	17.4	—
Policy—freedom speech press	10.0	5.0	—	—
Policy—IP copyright	—	—	4.3	—
Policy—licensing	5.0	10.0	30.4	43.8
Social construction technology	—	—	—	12.5
Uses and grats	—	—	—	6.3

(continued)

Table 6. (continued)

Years, Number of Articles Codes	35–49 (*n* = 20)	50–69 (*n* = 20)	70–89 (*n* = 23)	90–17 (*n* = 16)
Research design general				
Qualitative no numbers analyzed	70.0	55.0	30.4	50.0
Quantitative numbers analyzed	30.0	45.0	69.6	50.0
Research design specific				
Case study	15.0	20.0	21.7	50.0
Experiment lab	—	—	4.3	12.5
Experiment field incl naturally occurring	—	—	8.7	6.3
Historical past for author	15.0	5.0	4.3	—
In-depth interviews	—	—	4.3	—
Measure research development	—	—	4.3	—
Survey including experiments	15.0	35.0	21.7	18.8
Theory explanation development	—	5.0	—	—
Field observation includes desc stats incl markets	35.0	25.0	30.4	12.5
Technology forecasting	10.0	5.0	—	—
Literature review	—	5.0	—	—
Descriptive comparison	5.0	—	—	—
Industry overview of best practice	5.0	—	—	—
Academic indicators				
Visual	25.0	35.0	73.9	62.5
Abstract	70.0	95.0	100.0	100.0
Limitations	10.0	30.0	21.7	37.5
Reference/footnote	45.0	95.0	91.3	100.0
Research question/hypothesis	—	10.0	26.1	43.8
Page numbers	6.05 (2.46)	6.15 (2.06)	6.96 (1.33)	12.00 (4.73)

Note. Values for Author Type, Theory, Research Design General, Research Design Specific, Visual, Abstract, Limitations, Reference/Footnote, and RQ/Hypothesis are percent of each code within each period. Values for Page Numbers are *M* (*SD*) of number of pages for articles within each period. IP = intellectual property.

Table 7. Percentage for Each Period of Content Analysis Codes with Two or More Choices.

Years, Number of Articles Codes	35–49 (*n* = 40)	50–69 (*n* = 40)	70–89 (*n* = 46)	90–17 (*n* = 32)
Topic 1st and 2nd				
None	—	—	—	12.5
Advertising marketing	2.5	5.0	4.3	6.3
Changing trends	—	2.5	2.2	—
Cross or multiple media competition collaboration	20.0	2.5	2.2	—
Expenses revenues finance business	2.5	—	2.2	—
International issues	17.5	22.5	6.5	3.1
Media journalism history, not technology	2.5	—	4.3	3.1
Media audiences aggregated	7.5	7.5	8.7	9.4
Media effects, in general	—	2.5	2.2	3.1
Media industry	2.5	2.5	2.2	—
Media professionalism	10.0	5.0	2.2	—
Media technology forecasting	5.0	2.5	—	3.1
Media technology historical	2.5	—	4.3	15.6
News coverage reporting author analysis	7.5	7.5	6.5	6.3
News processing attention memory learning	2.5	2.5	—	3.1
News responses audience perceptions credibility	—	—	—	3.1
Policy regulatory issues	5.0	2.5	23.9	28.1
Political issues	—	—	2.2	—
Persuasion public relations communication campaigns	—	2.5	—	—
Policy station or media company	—	5.0	2.2	—
Cultural specific country group religion	—	5.0	2.2	—
Foreign policy not regulatory	2.5	5.0	—	—
Research process tutorial new	2.5	5.0	2.2	—
Programming radio TV	7.5	10.0	19.6	3.1
Theory model development	—	2.5	—	—

(continued)

Table 7. (continued)

Years, Number of Articles Codes	35–49 (*n* = 40)	50–69 (*n* = 40)	70–89 (*n* = 46)	90–17 (*n* = 32)
Data sources 1st and 2nd				
None	7.5	17.5	17.4	21.9
Archives documents	30.0	30.0	37.0	34.4
Articles publications incl policy legal	10.0	7.5	10.9	15.6
Discussions comments online content, e.g., posts	—	—	—	3.1
Interviews personal individual	—	—	6.5	3.1
Media audience ratings	2.5	7.5	4.3	—
Observation any type not if media content being analyzed	5.0	10.0	2.2	—
Personal author history	12.5	2.5	—	—
Survey questionnaire any means	10.0	12.5	15.2	18.8
Usage circulation subscription purchase	12.5	5.0	2.2	—
Media content the content itself	10.0	2.5	4.3	3.1
Diary	—	5.0	—	—
Analysis 1st and 2nd				
None	10.0	15.0	8.7	15.6
Content qualitative	—	2.5	2.2	3.1
Content quantitative	—	7.5	13.0	6.3
Cultural and or critical	—	2.5	2.2	3.1
Economic	7.5	—	—	—
Essay opinion personal approach	22.5	5.0	—	—
Historical	7.5	7.5	10.9	25.0
Legal not specifically policy regulatory	—	—	2.2	3.1
Literature review synthesis	—	5.0	—	—
Policy regulatory not specifically legal	2.5	5.0	15.2	15.6
Political process background	5.0	7.5	4.3	0.0
Sensory visual and or audio	2.5	—	—	—
Descriptive only one or more variables	2.5	2.5	4.3	3.1
Bivariate relationship	10.0	7.5	19.6	0.0
Multivariate three or more vars in a given analysis	2.5	7.5	10.9	21.9
Descriptive report but not just reporting	27.5	25.0	6.5	3.1

(continued)

Table 7. (continued)

Years, Number of Articles Codes	35–49 (*n* = 40)	50–69 (*n* = 40)	70–89 (*n* = 46)	90–17 (*n* = 32)
Technology/Media 1st–3rd, other				
None	30.0	53.8	54.3	56.3
Facsimile	3.8	—	1.1	—
Movies film online theater TV	2.5	—	1.1	—
News Bureaus wire service AP UPI Radio free Europe	5.0	5.0	—	—
Newspapers press	18.8	6.3	3.3	3.1
Phone landline	—	—	—	1.6
Phone mobile	—	—	1.1	—
Radio AM FM monaural stereo if specific focus	3.8	—	1.1	3.1
Radio local station	6.3	5.0	4.3	14.1
Radio network aggregated presume if not specific local incl shortwave	18.8	17.5	8.7	7.8
Radio online	—	—	—	1.6
Satellite including satellite networks	—	—	1.1	—
Telegraph	—	—	—	1.6
TV local station	1.3	1.3	7.6	4.7
TV networks if not specific local not cable	6.3	7.5	12.0	1.6
TV UHF VHF monaural stereo if specific focus	—	—	4.3	—
Local traditional not mass media phones	—	1.3	—	—
Wide range of AV media	1.3	—	—	—
Telecommunications	1.3	—	—	1.6
Multiscope	1.3	—	—	—
Videotape	—	1.3	—	—
Teletype	—	1.3	—	—
Wireless communication services	—	—	—	1.6
Digitization of stations	—	—	—	1.6

Note. Values for Topics1&2, Data Sources1&2, and Analysis1&2 are percent of the total instances from each pair (divided by twice the total number of articles for each period; i.e., 40, 40, 46, 32). Values for Media are percent of the total instances from Media 1st, 2nd, 3rd, and Other (divided by the total number of articles for each period; i.e., 80, 80, 92, 64). The percentages for "None" are mostly for 3rd or Other media. Not all articles were coded for all 2nd, 3rd, or 4th instances. We do not report overall F-ratios of the overall mean differences across periods, as the data constitute the population of interest, so inferential statistics are inappropriate. 0.0% shown as "—" to simplify presentation. The Codebook (Appendix 3 in the Online Supplement) contains more detailed and expansive operationalizations for the abbreviated entries here. AP = associated press; UPI = United press international; AM = amplitude modulation; FM = frequency modulation; UHF = ultra high frequency; VHF = very high frequency; AV = audio-visual.

news. Related topics included competition for audience share, the rise of radio news commentators, awareness among some newspaper ownership groups about potential synergies with radio, co-ownership, pressures from radio that prompted innovation in the newspaper industry, and changes in circulation, listenership, and radio set ownership (Barnett, 1943).

Over the years, forecasts about new uses of emerging media met with various degrees of accuracy. Hotaling's (1948, p. 143) review of three periods of broadcast facsimile history gushed that, "The breadth of facsimile's possible uses staggers the imagination." Two decades later, Webb (1971, p. 498) announced that "facsimile as a 'mass' communications medium is very much alive now and is already on its way to becoming one of the most widely used media in existence, public or private." Early forecasting highlighted some capabilities now familiar to the digital era. For instance, Lazarsfeld (1941, p. 11) suggested that, "There is no reason why the radio should not announce the existence of a product and then refer, 'for further details,' to current advertisements in newspapers and magazines"—a concept similar to online hyperlinking.

Some speculations did come to pass, such as Tan's (1976, p. 699) proposition that a cable TV channel devoted to weather might be an "ideal" alternative to covering the weather only during television and radio news slots; indeed, The Weather Channel, now a cable staple, was founded in 1982. Wiebe (1955) accurately predicted radio and television innovations, such as "feasible equipment advances as ear-phone radios, video tape recorders handling color, and worldwide TV transmission. . .. radio receivers smaller than a package of cigarettes. . .. pocket-sized tape recorders. . .video tape. . .trans-Atlantic coaxial cable. . ." (pp. 27–28), as well as the ability to edit audio and video tape recordings, which could create false or misleading information (similar to the "deep fakes" of today).

Affordances. While considerable communication and technology research has studied how media vary in terms of features, attributes, characteristics, or (more recently) affordances, early *JMCQ* articles discussed and compared aspects of what were then legacy (newspapers) and emerging (radio, television) media. These include shortwave radio's timeliness and ability to circumvent media control by Russia and other countries after WWII (Davis, 1946); television's combination of "the instantaneous immediacy of radio with the realism of the motion picture and the personal intimacy of the lecture platform" (Cassirer, 1949, p. 278); and, the features of the business-document transmission medium of facsimile (Webb, 1971). Meanwhile, radio offered a more intimate, relaxed listening context, and unlike newspapers, vocal contact (Browne, 1965). Mindak (1957) noted radio's portability, companionship, and the value of listening while doing other things.

Newspapers attempted to adapt to the growth of new electronic media through "flash coverage" (rapid reporting), in-depth analysis, embracing their role as the medium of record and credibility, and an increasingly visual approach that incorporated more photos, varied typefaces, and comics (Barnett, 1943). Lazarsfeld (1941, p. 11) highlighted the convenience of print: "We can read at a time we choose, at a speed appropriate to the topic; we can skip one page in reading and dwell upon another. These are advantages which the less flexible radio program does not have."

Counterintuitive Results. Several articles in the analysis presented results counter to prevailing arguments about mass media. For example, radio and TV program preferences in 1955 were about the same for the commercial American media as for the non-profit British Broadcasting Corporation (Paulu, 1955), indicating that motivations for structure and content emphasizing educational and cultural material do not overcome audience preferences for variety shows, drama, and light music. Articles analyzing the legal, technical, and regulatory aspects of unlicensed and pirate radio broadcasting (e.g., Jones, 1994; Phipps, 1991) concluded that most pirate radio broadcasting only conveyed rock and progressive dance music, so might run afoul of FCC rules that required radio stations to serve in the broader public interest, convenience, and necessity; they could also be challenged on the basis of illegal and wasteful frequency use (Jones, 1994). Wirth and Wollert (1976) found that most multi-media and group-owned radio stations actually provided more public interest programming than independent stations, countering arguments against cross-ownership and concentration.

Curiosities. Fans of now obscure—but at the time important—media issues and technologies will find much to enjoy. These include accounts of the FCC's failed campaign to regulate false or misleading medical advertising on radio (Smith, 1994), the successful but eventually discontinued Public Telecommunications Facilities Program (Huntsberger, 2014), foundations of early radio in one-to-many wireless telephony (Balbi, 2017), or low-power radio using Class D FM (low-power 10-watt educational) (Stavitsky et al., 2001), and the worldwide newsprint shortage following WWII, which posed a major obstacle to education and the free flow of information (Behrstock, 1949; Maheu, 1948).

Theory

Policy/Regulation. Legal and policy principles (e.g., regulatory theories such as freedom of the press, copyright, and public service programming) provided the largest and most consistent conceptual backdrop for research while more social science concepts such as diffusion of innovations, persuasion, and information utility received scant mention. Media regulatory policy, processes, and effects were a frequent topic of *JMCQ*. Articles covered the rise of early TV stations and the 1953 FCC regulations on multiple- and cross-media ownership, which were shaped by a desire for diversification of media voices (H. H. Howard, 1976). Other articles reported on the effects on minority owners' licensing of frequencies for radio, television, and other wireless communication services associated with the FCC's switch to auction-based bidding and awarding beginning in 1995 (P. N. Howard & Smith, 2007). Carter (1951) reviewed the shifting Supreme Court, FCC, and radio industry positions on editorializing (especially in the context of the Fairness Doctrine), and the associated balance among news impartiality, media and public service, and government censorship. Sterling (1971) provided an in-depth policy, economic, technical, and sometimes tortuous history of the rise of FM radio, emphasizing the crucial role of the FCC.

International Information Flow. Thoughtful essays and analyses covered issues such as the role of the US government and commercial wire services in broadcasting information or propaganda in other countries post-WWII (Davis, 1946; Gerber, 1946). A bevy of analyses addressed the stark nature of the Cold War against communism after WWII, in both eastern Europe and Asia, fought via independent, private, and local Radio Free Europe and Radio Free Asia news and radio station networks (e.g., Feinstein, 1954).

Social Construction of Technology. During the 80-year period, just two cultural-critical theories were identified: a critical theory of capitalism and the social construction of technology. The social construction of technology approach was used to uncover and analyze how media innovations were shaped by social forces. For FM programming, Beville (1948, pp. 5–6) noted that

> Unfortunately . . . musical programs broadcast over standard band stations until recently could not be simultaneously broadcast over a companion FM station without employing a double crew of musicians. The American Federation of Musicians had refused to negotiate contracts for the use of musicians on networks of FM stations.

The passage, blockage, or delay of international treaties concerning freedom of information, especially news flows, were thoroughly interlinked with global political issues and conflicts of the time (Exley, 1953). Arceneaux (2006) revealed how the diffusion and domestication of early radio sets in the 1920s were heavily influenced by department store marketing strategies, including in-store radio stations.

Method. Research approaches were initially mostly qualitative in nature (70% in *35-49*), then pivoted to a mostly quantitative footing (69.6% in *70-89*). Balance (50% each) was achieved in the most recent period. Specific research designs followed these swings, with case studies, field observations, and survey methods most often employed. Experimental designs were utilized in 13% of articles in *70-89*% and 18.8% in *90-17*.

As research became increasingly sophisticated and precise, the focus broadened beyond industry concerns about ratings and competition to include audience studies that investigated questions around individual consumption, media effects, and user evaluations. The emergence and adoption of various media (radio, TV), and the rise of academic departments of media and communication, prompted the development and application of research methods to better understand audience preferences and type. These included comparisons across survey and sampling approaches, and combining data from multiple sources, such as coded program content, surveys, census tract information, and/or industry reports (Hileman, 1953; Mickelson, 1943; Williams & LeRoy, 1976). Some articles involved naturally occurring field experiments. One analyzed the change in broadcast advertising and program content regulation from National Association of Broadcasters Code-based (ending in 1982 due to anti-trust action) to company-based self-regulation (Linton, 1987). Another reported on a field experiment evaluation in two Alaskan Eskimo towns, one with of relayed television and the other with only radio (Coldevin, 1976).

Interestingly, case study approaches to technology research remained the most common form of research design and increased to 50% of all studies in the fourth period (*90-17*). These included coverage of culturally diverse audiences, such as of Pueblo Indian Radio (Rada, 1979); administrative, historical, technical and programming descriptions of international and national media structures, such as within and between West Germany and East Germany (D. A. Boyd, 1983); and, the emergence of radio as Pakistan's national communication medium after the 1947 partition with India, especially noting issues of nation-building, geography, multiple languages and ethnicities, poverty, lack of media technological expertise, and illiteracy (Olson & Eirabie, 1954). Siebert (1971) described a complex copyright issue: how to control and compensate for multiple retransmision of content broadcast by satellites, with the introduction of direct broadcast satellites and the rapid growth of ground stations.

Sources and Types of Data. Data sources were often secondary in nature—archival papers, government documents, industry publications, and other academic articles. Less frequently used sources included questionnaires, audience ratings, circulation and usage data, interviews, and media content.

Academic Indicators. As the journal matured in the 1950s and 60s, academic authorship and more conventional research grew to 75%; by the most recent period, academics constituted 100% of authors in this *JMCQ* topic area. Hallmark signs of academic scholarship, including tables, figures, charts, graphs, abstracts, study limitations, references, footnotes, and identifiable research questions or hypotheses, have become increasingly evident. To accommodate the extra space requirements that academic research demands, average lengths of these technology articles increased from 6 pages in the earliest period (*35-49*) to 12 pages in the most recent period (*90-17*).

Conclusion

The development and diffusion of media technology was a top of mind concern for authors in Topic 9, Communication Technology/Media Channels, of *JQ* and then *JMCQ*. While tracking the growth of upstart media such as radio and television before and after WWII, analyses documented the impact to the legacy press (namely, newspapers) and chronicled its gradual decline in circulation and numbers as the country and world veered increasingly toward instant, audio, and visual forms of news. The story of journalism and mass communication is more one of integration than replacement, however, as the larger newspaper chains were quick to invest in radio stations and form cross-ownership groups with the new rival media. Unruly competition over the publicly owned airwaves forced the US government to intervene with standards and regulations, a trend that continued after WWII with the rise of television but became less evident as industry self-regulation became the norm in the Reagan era. This reluctance to regulate has remained the default posture of the government toward electronic media ever since.

Early articles in the journal ranged from applied research by academics, and overviews of industry trends by media executives, to reflections on best practices from educators, and descriptions of information flows and need for media development abroad. Over time, a more clearly academic style became evident and the percentage of non-academic authors dwindled. Aside from general principles (policy theories) of free speech, freedom of the press, and democracy, and regulatory concerns about licensing, cross-media ownership, media concentration, localism and related issues, very little recognizable "theory" was used with any regularity until the modern era.

Lessons and emphases from the past can serve as prologue to future developments. Indeed, some of the articles are highly valuable histories of the developments, challenges, and policy conflicts that led to stable media environments for broadcasters of radio and television, which were respectively seen as the "new media" of their time. Inherent in forecasts about the applications of new media, such as radio's superficial headline style of reporting compared to the print press's more in-depth style, early demonstrations of misleading video editing, and FM stereo changing the very nature of AM radio, are concerns about the power and unintended implications of communication technology.

These concerns are quite contemporary in nature and are reflected in debates over emerging media today, especially artificial intelligence, deepfake videos that pass as real, disinformation that passes as news, digital devices that enable diverse applications and customization but also continuous monitoring and surveillance, and so on. Indeed, *JMCQ* publishes articles on a wide variety of new digital media technology, but less about mass media and more integrated with other issues, so those were not included in Topic 9 but are embedded in some of the other topics. Considering just the past year (mid-2022 to mid-2023 and online first), *JMCQ* articles cover a wide array of digital media. *Artificial intelligence*-based algorithmic bias and filtering in media can foster discrimination, distortion, and low accountability (Shin et al., 2022). German audiences allocate different figurations of trust across digital news media and peers (Mangold et al., 2022), and how trust signals in *Google* search results influence perceptions of news credibility (Masullo et al., 2022). Black *Instagram* use is related to activism orientation and identity ideology (Li, 2022). Columbian TV news organizations use *social media* videos to complement their broadcast content, and to assess audience preferences (García-Perdomo, 2021). Use of social media in China for political expression and information affects civic engagement (Guo & Chen, 2022), and Chinese government and public user framing on the major social medium Weibo diverge in content and cohesion (Zhao & Wang, 2023). Identity-focused use social media by US Blacks can foster motivations to participate in Black community collective action (Stamps, 2022). There was considerable differential *Twitter* activism through #BlackLivesMatter and #BlackTransLivesMatter (Dunklin & Jennings, 2022); and Twitter users for Black Lives Matter and March For Our Lives movements applied identification strategies to build public relationships (Edrington, 2022). Other articles analyzed Twitter responses to two top magazines' special issues on Breonna Taylor's killing (Grant et al., 2022), and Twitter discourse accounts and hate speech

about one US Muslim congresswoman (Pintak et al., 2022). *YouTube* algorithmic searches affected belief in misinformation about US Muslim congresswomen (Ahmed & Gil-Lopez, 2022).

Whether written by academics, working journalists, media executives, or government representatives, *JMCQ* articles about communication technology and media channels have looked cautiously forward and confidently back into the past to tell important lessons about media innovation, industry competition, complex policy-making, and informed citizenship. The shift away from ratings and audience analysis toward information processing by individual users in the television and now digital era signaled an embrace of wider trends in social science that positions the journal as an important resource in journalism and digital media studies generally. Journal topics in the emerging era might include concerns about AI and news, bot journalism, digital disinformation, political attacks on the mainstream press, the growing trend of news avoidance, and other difficult questions that the industry, policy-makers, the public, and democracies the world over are now facing. How *Journalism & Mass Communication Quarterly* keeps pace with these developments and continues to deliver useful insights for guiding the field forward will determine its resonance in the years to come.

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