

Studies in Big Data 97

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Total Journalism

Models, Techniques and Challenges

 Springer

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An Introduction to ‘Total Journalism’



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María-Cruz Negreira-Rey , Carlos Toural-Bran ,
and Xosé López-García 

Abstract We introduce the book’s scope, based on the concept of ‘total journalism’. The chapters are presented following the structure of the book. The contributions of the authors offer an overview of the main elements that make up total journalism today, providing an in-depth study and reflecting the trends in its development.

1 Background

Journalism has undergone an authentic metamorphosis in the first two decades of the twentieth century [30]. The popularization of the Web has led to the migration of the media industry’s communication products to the Internet and the emergence of digital native media. The beginning of a new technological transition and the emergence of the social web turned platforms into major players in the communication landscape. These transformations have positioned journalism in a network society that advances under the shadow of artificial intelligence and high technology [13].

Starting the third decade of the third millennium within an agitated scenario for the communicative ecosystem because of the social consequences of the COVID-19 pandemic, journalism continues to encompass debates that have accompanied it throughout history. The debate is ongoing about its role in society, the roles of journalists, ethical challenges, sustainability models, and social involvement in its management and preservation. The essential elements of journalism, its precepts and its techniques have defined it as a social communication medium. It has a heritage that allows it to face challenges with renewed techniques and tools, which we can call the ‘total journalism’ needed for contemporary society. Today there is a great hybridization of practices [12] and many questions remain about the future of journalism [7, 31].

Total journalism refers to the renewed and current journalism that employs all available techniques. It preserves multimedia, hypertextuality and interactivity as

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central elements along with the teachings harvested throughout the history of journalism. Total journalism is made for today's society and with the latest technologies, including: artificial intelligence, virtual reality, 5G technology, blockchain, big data, information visualization, transmedia storytelling, renewed verification techniques, and augmented reality. Overcoming the limitations of the physical and rigid supports of the past, today's communicative means accompany journalism to build informative pieces that provide added value and are useful to society.

The search for new paths is based on the combination of participation and the values of journalism [14], the effective articulation of the emotional turn to intervene in the new scenario [2], and the empathy that a good journalist must seek with users [11], among other emerging dimensions. The future of journalism is networked [28], although there are many questions in the current panorama, which is characterized by a hybrid system of old and new media [4]. Nevertheless, the future of journalism is a current debate to which many researchers and different sectors of society are seeking answers not only to help make it viable, but also to build better-informed democratic and pluralistic societies.

Many experiences of digital journalism show that there are ways of ensuring the future of journalism [8] because hardware and software have recently shown that, if used properly, they allow innovative formats and products that show good practices in the scenario of intelligent automation and societies that are highly sensitive to pandemics, threats, achievements, and future projects. This is the context in which we must place the challenges of the strategies of total journalism.

It is a kind of journalism marked by technologization—which works and is framed in the field of high technologies—and by a renewed humanism that feeds on the past and is oxygenated in the digital scenario. It is total journalism that creates many expectations for a society in need of information in a scenario marked by the shadow of disinformation, but which, at the same time, is accompanied by many debates that show its richness, diversity and need for social support. This twenty-first century total journalism [16] has tools, production processes, dissemination channels, narrative forms and professional profiles specific to the current technological scenario. On the other hand, the fundamental principles of journalism and its mission to tell reality based on truthfulness, loyalty, independence and citizen participation in public debate remain. Total journalism is a part of today's society and responds to today's society.

The context in which total journalism develops is complex and involves a variety of actors and technological and social factors. With an international vision, the authors of this book approach the study of total journalism from different perspectives: innovation in the journalistic field, which affects processes and products; disinformation and its relationship with big data, its effects on trust in the media or fact-checking methods; new media models, the interrelation of news actors or the relationship with the audience; as well as the challenges of the application of artificial intelligence to journalism.

2 The Innovative Nature of Journalism

In this context marked by rapid technological evolution and growing cultural complexity, the study of journalism needs to recover and update concepts as decisive as convergence or innovation. Larrondo Ureta and colleagues [15] review the main empirical studies on newsrooms convergence and address how the technological adaptation of the media is a driving force for innovation and the development of hi-tech journalism. The integration of total journalism elements and media convergence have accelerated the development of digital innovative narratives and the transformation of genres. New forms of storytelling are emerging that combine classic narrative resources with technology and interactivity. Along with a review of the relationship between journalism and narratives, Vázquez-Herrero and de Haan [29] expose the value of interactive documentary and immersive journalism in the face of complexity and with the aim of finding the best way to inform the audience. On the other hand, García-Avilés and others [9] study the application of gamification elements to the creation of innovative journalistic products. The authors analyze the newsgames *The Ocean Game* (2019) and *The Amazon Race* (2019) and point out narrative and audience participation possibilities offered by this storytelling genre.

The consolidation of new narratives and forms of interaction with the audience is possible thanks, to a large extent, to the ubiquitous connection of the user and the consumption of content at almost any time and place. Silva-Rodríguez and Aguado-Terrón [24] discuss how digital media are adapting to the mobile era and review various journalistic initiatives and products developed through mobile technology, artificial intelligence and big data, which give rise to new narrative formats and forms of participation with the public. In adapting to the multiplatform scenario, various challenges also arise in the field of information visualization. Figueiras and Vizoso [6] address this issue and select the most innovative examples from the international media scene to present an overview of the changes that visual narratives have undergone in recent decades.

The application of high technology in journalism opens up new opportunities but also generates debates. The automation of news production and user interaction processes, and the use of personal assistants and smart speakers, are based on the use of artificial intelligence and big data to generate optimized responses to user profiles. On the other hand, immersive technologies and drones bring new visual perspectives. Pérez-Seijo and Vicente [21] conclude that technology is part of news production DNA and that journalists face their role supported by it, also considering that there are risks and challenges for journalistic practice. In this scenario, the so-called emerging journalisms apply techniques and technologies in the search for quality journalism that guarantees a future in which reinvention will be a constant. López-García and colleagues [17] point to a shift from experimental intuition towards prediction and constructive and solution-based journalism, passing through various movements that have used technology as a support for journalism.

3 Big Data and Information Disorders

Among the great challenges facing journalism today is that of combating disinformation and recovering the value of the media as reliable news actors. In recent years, the public dissemination of falsehoods has focused academic attention on terms such as post-truth, fake news and alternative facts. Disinformation and misinformation cover more precisely the multitude of modalities of false content circulating in our society, according to their intentionality or unintentionality, respectively. These phenomena, however, go beyond the media. Salaverría and León [23] review types of false content and the factors that influence its dissemination, as well as providing a historical overview of this topic.

Situations such as the COVID-19 pandemic create a landscape of change and uncertainty that serves as a breeding ground for misinformation. The spread of panic and confusion in the media, coupled with the emergence of fake news, has generated a state of infodemic with negative effects on building trust in vaccines. Costa-Sánchez and Peñafiel-Saiz [5] analyze the information patterns and habits in times of pandemic in Spain and offer some keys and recommendations for good communication management on the subject of vaccines against the virus.

From a broader perspective, García-Marín and others [10] approach disinformation from an academic perspective, aware that the technological dimension of total journalism does not just affect the reality of the media and journalists. They study the assessment that journalism students make of technological tools to fight disinformation, analyze the scientific literature published in recent years, and point out the main avenues of technological development in service of fact-checking. The authors argue that the conjunction of journalism with other more technical and technological disciplines is necessary.

4 Models, Professionals and Audiences

In the context of total journalism, media models emerge or are renewed, new news actors appear, and the professional profiles of communicators are transformed. Constant innovation due to the platformization, datafication and algorithmization of the communicative sphere causes journalists to develop new profiles adapted to the contemporary digital scenario, which are studied by Barbosa and colleagues [1] in this work.

In addition to the continuing professional crisis of journalists, there is the challenge of the economic sustainability of the media, which many are trying to address with the implementation of paywalls as a measure to obtain income. Tóth and others [27] describe the social implications of such tools, which use big data in some form to adjust the limitations of news consumption. Users' refusal to pay and the inequality that purchasing power can generate both justify the need to advance in the search for new sustainable business models for news production.

As journalism adapts to global technological and communication trends and seeks solutions to their challenges, the local space is revalued as a meeting place for journalists and citizens. Local and hyperlocal digital media are experiencing significant growth at the international level and are becoming a new media model. Negreira-Rey and colleagues [19] study the local digital media maps of Spain, France and Portugal. They point out some of the keys to their development and discuss strategies for connecting with the audience and citizen participation.

Users have long since assumed an active role in the communicative processes, taking a central place in the editorial and business strategies of the media. This interest in the audience gives rise to new professional profiles aimed at designing strategies that understand, stimulate, and measure engagement with users. Rodríguez-Vázquez and others [22] summarize the experiences of 100 international digital media in the field of audience measurement, which are aimed at strengthening the connection with users. An example of the search for this connection is the integration of the dynamics of co-creation of content in the news production process. Sixto-García and colleagues [25] study these dynamics in digital native media and identify three main forms of co-creation, which are the suggestion of ideas and issues, submission of elaborated content and contribution to circulation and diffusion.

What seems evident in the current digital environment is that the voices of journalists and the public sector converge with those of other actors, creating a polyphonic and multidimensional communicative space. Solito and Sorrentino [26] approach this complex communicative space in the context of the COVID-19 pandemic. They focus their study on the main communicative actors in social networks in three regions of Italy and analyze their communicative strategies and impact on the audience.

5 The Challenges of Artificial Intelligence

The fourth industrial revolution brings with it a cultural and technological change that has a direct impact on journalism. Micó-Sanz and colleagues [18] study how big data, artificial intelligence, viral and augmented reality, and machine learning affect journalism in its relationship with the audience, business models and news production. In this hi-tech context in which total journalism is developing, the rise of artificial intelligence has made it possible to integrate it into newsrooms to facilitate routine coverage related, for example, to sports and economic information. Canavilhas and Essenfelder [3] address this issue and analyze the presence of topics related to artificial intelligence in five Portuguese media from a multidisciplinary perspective and with the aim of detecting the thematic approach, the value, the news genre or the section in which this information is published.

To close the book, Palomo and colleagues [20] take a critical look at the future of journalism and its relationship with technology. Despite the strong influence of artificial intelligence and other buzzwords, "the future of journalism is journalism". With the need to remain alert to new technological developments and the ethical debates involved in the application of technologies in the journalistic field, the 2030 horizon looks complex and promising.

6 Conclusion

The contributions of the authors of this book provide an overview of the main elements that make up total journalism today, providing an in-depth study and reflecting the trends in its development. Total journalism is determined by a highly technological and changing context, the adaptation of media and professionals to this complex environment and a communication and social scenario in which new actors, new information problems and renewed consumption habits of an increasingly active audience are emerging.

In this complex environment, hi-tech is placed at the service of the news function. The media are incorporating artificial intelligence, automation and big data management to make certain production processes more efficient or to develop new verification tools in their fight against disinformation. Advances in mobile technology lead to a scenario of ubiquitous connection, which redefines the dissemination of information through mobile devices and leads to the intensification of convergence in media organizations. Technological change induces a continuous process of innovation in which narratives, journalistic genres and formats are transformed. Content is becoming more visual and interactive, experimenting with immersive formats or introducing logics from other cultural products such as gamification. The complexity of the context affects not only the technological level, but also the social level. The new social communication platforms have opened the door to new communication actors and have fuelled problems such as disinformation.

Within this new context, the media are seeking to adapt with new organizational, production and business models. The construction of profitable and independent editorial projects is still a challenge, as is the adaptation of journalists to a market in which new professional profiles are in demand.

However, in total journalism, the essentials remain the same. The protection of truthful reporting and the battle against disinformation are becoming crucial to preserve the value of honesty in the media and to continue to build trust. At the same time, proximity between media and citizens is revalued in local journalism, which is always responsive to the needs of its community. Finally, the audience becomes central to editorial and business decisions and strategies. Passive reception by users has been transformed into active participation in news production, co-creation of content, dissemination and public debate.

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The Innovative Nature of Journalism

Convergence and Innovation: The Conceptual and Methodological Basis of Technological Evolution and Cultural Complexity in Journalism



Ainara Larrondo Ureta , Javier Díaz Noci , and Ivar John Erdal 

Abstract This chapter seeks to contribute to the contextualization of current trends, based on a review of the resignification of concepts such as convergence and innovation in the field of journalism, concepts that are essential when it comes to understanding technological development and the increasing cultural complexity of Journalism. In fact, journalism today presents a hybrid scenario of old and new media, one that is beginning to be described as “hi-tech journalism”, in which professionals strive to find stable employment and maintain basic principles of news journalism, such as rigor, truthfulness and quality. On the basis of this general and complete approach, the chapter is completed with an analysis of the main empirical studies on newsrooms convergence as one of the main media innovation development factors.

1 Introduction

At present journalism has major challenges and opportunities, while at the research level it is much more open to other fields, even technical ones, creating growing connections that are now beginning to be delimited [15, 16]. In this scenario, it seems necessary to tackle the matters of innovation and convergence from a refreshed academic perspective that is, nonetheless, defined by a background of over twenty years of research into digital journalism.

The increasingly technologized condition of journalism was already glimpsed in the first analyzes of the changes that digitization and the World Wide Web were bringing to the media industry at the end of the 1990s and the early 2000s.

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Over time, successive case studies on convergence processes in the press and Public Service Broadcasting (PSB) showed that change, more than being a mere digital adjustment of the systems of production, was systemic and of cultural importance [27, 35]. Media convergence was defined, then, as a multifaceted phenomenon facilitated by the technology that was affecting different areas of action within the media, with the goal of optimizing the creative process of journalism, in terms of planning, production and distribution. Newsroom convergence then became a key area of study [63:59, 29].

The now classic work *Convergence Culture* [31] indicated that the true scope of the convergent scenario could be felt in the internal changes within the media and culture industries and, therefore, in the social changes linked to the consumption of media. Today the media seek effective strategies in terms of engagement, given the proliferation of media available, the different usages of these media, and a role adopted by audiences that is both passive and active. It would be useful, then, to redirect attention towards dimensions that interrelate previously dissociated cultural and technological viewpoints (social Actors, technological Actants, working or productive Activities, and Audiences) [41:19].

In fact, the implementation of new technologies and their potential impacts on journalism are still a prominent theme in digital journalism research and the current research scenario provides a good opportunity to avoid the methodological bias towards newness: “The benefit of such approaches is that they make visible the importance of non-human actors like technology in how digital journalism is practiced and developed. However, Actor-Network Theory (ANT) and similar approaches can lead to an overestimation of non-human actors like technology [...] There is therefore a risk that non-human actors and actants are ascribed too much meaning and power” [71:84].

2 Web Convergence as a Driver of Change

Journalism is going through the best of times and the worst of times, although it could be that this very disruptive perception would have been shared by those who were carrying out and studying the profession decades ago. Whatever the case may be, the feeling of constant change within the media field has intensified with the rise of digital technology and its outstanding manifestation, the web, over the last three decades.

With the arrival of the first online media in the mid-1990s, press, radio and television groups and companies inaugurated a new period of continuous experimentation in the search for greater convergence among their media divisions, at all levels and in different areas. The goal was to achieve greater productive profitability based on the use of the web as a fourth major media platform. The aim was to put into practice a cross-media content strategy, that is to say, content created for one medium but distributed on others, generally the web.

In order to do this, the media companies adjusted their productive operations (content and formats) [6, 74] based on new strategies that affected the day-to-day organization of the newsroom (organization chart, coordination, physical layout, routines, professional profiles, etc.). Some companies choose to physically group together in a single room writers from different media in order to facilitate basic routines, such as sharing sources, something that created reluctance and apprehension among the more experienced professionals; others chose to go even further and fuse newsrooms in order to forge multimedia organizational structures, with the consequent staff reduction. Inevitably, these changes affected journalist profiles, and they became multi-skilled professionals with the capacity for multi-tasking and the ability to operate in multimedia environments.

To accompany these changes, the media companies took on digital technologies adapted to the different technical sub-processes (information gathering, publishing, sharing in the newsroom, etc.). Thus began a stage of greater confluence known at the research and academic level as 'journalistic convergence' or 'media convergence' [43].

The last decade has seen an intensification of this line of thought, which seeks to maximize profit through production based on multi-platform dissemination to the public, particularly on connected formats. This strategy's framework involves a growing orientation of news companies towards mobile applications [44]. This can be seen in the continuously growing use of mobile devices to access news, a growth measured in the United States as 300% since 2013, according to the Pew Research Center [53]. What is more, at the level of production and consumption, the change in paradigm is symbolized by the emergence of mobile journalism or MoJo. This is a field that has evolved, in terms of strategies, particularly quickly, as is shown by a shift from a Mobile First way of working to a Mobile Only one [23].

Audiences dedicate more time to consuming media, are more exposed to and have access to multiple sources of information—traditional offline and online media, digital natives, social media, etc. What is more, these audiences use the media with a productive approach, in the sense that they participate in the content generation process in different ways (likes, shares, comments, delivering data, etc.).

Today, consuming news in any format—television, press, radio, tablet, smartphone, etc.—is a habit that has become natural to all of us, without realizing that behind this possibility there has been an extensive process involving the restructuring of news groups and companies that has been undertaken in order to bring about an authentic convergence 'dialogue' among their different media divisions—between the printed medium and the web medium, in the case of newspaper companies, or among radio, television and the web, in the case of broadcasting companies, or among all of them, in the case of the multimedia companies. The search for new ways forward for journalism and the media thus is nowadays based, to a large extent, on a continual convergence of media that is supported by the latest digital technologies.

3 Innovation in Journalism: Responses to Technological Evolution and Expressions of Growing Cultural Complexity

As argued above, convergence is a framework of action that is behind many of the decisions regarding innovation that are happening in journalism today, even though this framework is not as influential as it was [39]. In fact, at the present time, after a ‘valley stage’ in terms of the intensity of convergent processes, the Internet of Things (IoT), artificial intelligence, 5G technology and even blockchain technology have laid the foundation of a renewed impulse for the convergent phenomenon, in company management, in the professional sphere and in the field of content creation [61]. This is the case of the present-day influence of the advances linked to big data and the robotization and automation of newswriting, as well as the introduction of new e-business models.

Research into innovation in journalism has become one of the main areas of study in recent years, given the interest in understanding what major changes will be introduced into media companies, above and beyond technological impact and independently of these companies’ size and nature, whether public or private. Innovation has become a decided commitment of the media companies, as shown by the proliferation within them of innovation laboratories, often known as Labs or Medialabs. Google’s News Initiative project has inspired many of these developments for journalism, through its News Lab laboratory, and has also sown certain doubts about possible alliances and rivalries among the major technology and media companies.

The struggle to achieve audience attention and engagement has intensified and has propelled the search for attractive and innovative formulas for offering content through multiple channels. These multi-platform stories can be simple—a single news item adapted for dissemination on different media, as happens with news and some reports—or more complex, as is the case with examples of immersive journalism and of transmedia—a single event is reported based on the use of different media and on the active role of audiences, which become prosumers, that is, both producers and consumers [23].

Media or content laboratories are a growing phenomenon, due to the journalism industry’s constant need to incorporate new products making use of technological advances that arise, such as big data [61]. In the same way that, in its day, the rise of the web brought the need to develop new professional profiles adapted to the specific needs of online journalism (SEO professionals, online community managers, etc.), in recent years trends such as the automation of newswriting and so-called ‘robot journalists’ are becoming stronger. In a context increasingly dominated by Artificial Intelligence (AI) and big data, we see how the basic routines of journalists are being codified through algorithms. These create news products that stand out for their depth and accuracy, although they are not exempt from questions regarding their practicality and ethical suitability. However, it seems that this matter, and other even more concerning phenomena, such as fake news, will affect developments over the next few years in both the professional and research fields.

In short, media convergence-related innovation and entrepreneurship have become crucial for the advancement of journalism, based on a search for solutions to problems such as loss of audiences and income, by companies, and a lack of job opportunities, by professionals in the industry. In fact entrepreneurship is seen, in general, as one of the main routes to employment in the media industry, as shown by studies focusing on the creation of media start-ups by journalists [3].

4 Headway of Conceptual and Methodological Approaches to Convergence

What is often claimed to be the first ‘significant’ international example of a merger of editorial teams took place in 2000 by the US group Media General in Tampa [62:39–47]. The editorial teams of *Tampa Tribune*, the local website *Tampa Bay Online* (tbo.com) and the TV broadcasting company *WFLA-TV* were relocated in the same building [67:23].

Emerging during the early and mid-2000’s, in the wake of digitization, this area of research studied news organizations focusing on the organizational and practical aspects of production.

In a seminal work on the production of regional news at the *BBC News Centre* in Bristol, Cottle and Ashton [5] integrated the study of news work and contents in the context of technological developments. Around the same time, Ursell [75] looked at how adoption of new technologies in three UK broadcasters, the *BBC*, *ITN* and *Yorkshire Television*, affected work organization and work conditions for journalists. She found increased work pressure and less time for journalism, with inevitable challenges to journalistic performance.

In an empirical study of the websites of four UK broadcasters (*BBC*, *ITV*, *Channel4* and *Channel5*), Siapera [66] concluded that television had gone online, but not changed its understandings of audiences. Across the Atlantic, Duhe et al. [12] found that nine out of ten American television newsrooms were practicing some type of convergence. However, less than half of them defined convergence as having one fully integrated newsroom.

These case studies on broadcasters were accompanied by research addressing the relationship between newspapers and online newspapers. A much-cited work is Singer’s [70] study of four converged news organizations in the US: *Dallas Morning News*, *Tampa Tribune*, *Sarasota Herald-Tribune* and *Lawrence Journal-World*. Singer found convergence processes to be in conflict with traditional newsroom values in two major areas: the distinct culture of the medium and professional competition. Using the theoretical framework of the diffusions of innovations theory, she argued that cultural clashes block convergence, as “cultural differences have led some journalists to minimize their involvement in convergence efforts” [70:16], and that the diffusion of convergence met stumbling blocks in the form of cultural and

technical differences and lack of necessary training to gain the competences needed for convergent news work.

Huang and colleagues also used the *Tampa Tribune* as their case, summarized an argument found in a lot of the literature, where opponents of convergence journalism worry that, “with less profound professional knowledge in a non-primary platform and with limited time for filing a story for multiple media platforms, reporters might not be able to produce quality journalism” [26:73].

Around the mid-2000s, there is a peak in convergence research with a flourish of case studies. In a lot of this work, the concepts of convergence and innovation go hand in hand. Steensen and Westlund [71:23] refer to an innovation bias in digital journalism studies, founded on the nature of capitalism where entities have incentives to continuously develop products and services, something that in turn are continuously changing society and markets. Alongside this, the ‘need’ for traditional news organizations to innovate have been very much present in digital journalism studies [51, 72], even if its status and results have been problematized [71]. Posetti [56] indeed describes the connection between an innovation discourse and technological optimism as the ‘Shiny Things Syndrome’, arguing that news organizations have been too occupied with innovation related to “bright, shiny things”, and less on long-term strategies for sustainable innovation.

While a fair amount of early and mid-2000s case studies found media organizations dealing with convergence by adapting their existing modus operandi to digital production, a successive range of case studies indicated a maturing of convergence efforts, something that was reflected on the research side by a tendency to probe deeper into profound systemic and cultural changes. An influential work in this category was Boczkowski’s [2] study of daily newspapers in the US, and their ventures into electronic publishing. He addressed the connections between technology and journalistic practice, and argued that the developments spurred on by technological change had to be seen in close relationship with the existing structures and practices of existing media. His main cases were *The New York Times*, the *Houston Chronicle* and *New Jersey Online*.

A recurring theme in this period of research was journalists’ concerns about cross-media journalism, as they perceive production for more than one platform either forces them to be spread too thinly, or increases their workload without compensation. Klinenberg [36] concluded in this manner after studying the digital endeavors of the print newspaper *Metro News*, while Dupagne and Garrison [13] analyzed the integrated *Tampa News Center*.

Many of the most cited studies of this period were done in the US context. Lawson-Borders [40] compiled case studies of three “media convergence pioneers” in the US, including the Tribune Company in Chicago, Media General in Richmond, and the Belo Corporation in Dallas. Huang and colleagues [27] mapped the “top concerns in the media industry brought up by media convergence” [27:83] by conducting a survey among merged and non-merged daily newspapers and commercial TV stations in the US, more specifically a sample of 523 newspaper editors and TV news directors. Silcock and Keith [68] included two converged cases in their study, the *Tampa Tribune* and the *Arizona Republic*, and their respective TV partners. Several of these