

6 On the Worlds of Journalism

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If only, as Michael Schudson (2013) has wished, we could get journalism to hold still for a moment, then we might assess what has happened to it, as an occupational field and paradigmatic form, during a period of seemingly unending and upending change. Then we might make sense of what has become of news—how it is produced, shared, used—in a world awash in digital media technologies. Such technologies enable networked arrangements that complicate conventional distinctions between production and consumption, professional and amateur, public and private, and so on. But while Schudson's desire is merely tongue-in-cheek, it speaks to a broader concern: the difficulty of understanding this thing called journalism at a time when technology has made a mess of what we thought we knew about a profession and practice intended to provide a first-draft accounting of public life.

In particular, technology has assumed an increasingly central role in every aspect of journalism (Anderson, Bell, and Shirky 2012; Lewis and Westlund 2015), much as in communication (Gillespie, Boczkowski, and Foot 2014) and media life (Deuze 2012) more broadly. Of course, technology is no more a single and stable "thing" than journalism is, but it is nonetheless apparent that a great deal of the recent change associated with journalism is technologically oriented: from ideas of "convergence" and then "digital first" becoming the norm in many newsrooms (Schlesinger and Doyle 2015), to discussions around training journalism students to write software code (Creech and Mendelson 2015), to grassroots movements to bring together journalists and computer programmers (Lewis and Usher 2014), to the growing role for news applications and interfaces (Ananny and Crawford 2015), to the adaption of news to suit the logic and flow of a social media environment (Belair-Gagnon 2015), to the heightened awareness of audience preferences via digital metrics (Petre 2015), and to the number of job advertisements looking for technologically savvy

individuals who know how to harvest and analyze large-scale digital data, put algorithms and automation to work for journalism, and altogether bring a computational mindset and skillset to their work (Lewis and Usher 2013).

As technology becomes more salient, different actors once external to or on the margins of news organizations have moved closer to the center (Nielsen 2012; Westlund 2011). For example, the computer nerd once tasked with fixing email and shoveling content onto the website is now enrolled in coming up with new storytelling techniques, such as making news more interactive for users (Usher 2016). Some of these technologists are journalists turned coders while others are outside web developers and data scientists brought into newsrooms. Either way, these changes contribute to new contexts in which journalism is understood as a social system and applied as an occupational practice. In all, these shifts enable new kinds of symbolic interactions, which continually redefine the social meanings of various forms of news work. This, in turn, leads to the reinterpretation of journalism itself, and the boundaries associated with that domain (Carlson and Lewis 2015).

Our goal in this chapter is to consider what such developments mean for conceptualizing journalism and its interrelationship with technology. Rather than analyze a particular empirical case, this chapter makes a broad conceptual provocation about what we call the “worlds” of journalism. We argue that, to fully understand the nature of technological change in journalism, it is important to adopt a sociological lens that brings into focus the *collective* nature of journalism—its interconnected people, processes, and products—as well as the relative status, or *valuation*, afforded to certain actors and activities. Drawing on symbolic interactionism as a theoretical framework, and in particular Becker’s (1982/2008) application of its ideas to the study of “art worlds,” we call for considering journalism—and specifically ambient, data, and algorithmic journalism—as a series of distinct but intersecting “worlds.” These worlds represent networks of social actors, labor activities, material infrastructures, and patterns of production that collectively enable and legitimize particular forms of journalism.¹ Put another way, particular and constantly changing configurations of actors, conventions, and cooperative activities permit and constrain particular forms of journalism, and confer upon those individuals, processes, and products a certain status that may not fully translate across the flexible and porous borders of those arrangements, or worlds.

Seeing journalism in light of worlds, we argue, helps accentuate at least three things: (1) the heterogeneity that exists among social actors (humans)

and technological actants (machines) and their activities; (2) the development and negotiation of various conventions that give shape to certain creative works; and (3) the resulting arrangements that, while constantly in flux, lend distinctive value (and thus status) to certain people, practices, and products. Such valuations matter ultimately in shaping understandings of and expectations for journalism as a social enterprise that is increasingly technological in orientation.

Worlds as a Framework

Becker's (2008) ideas are in many ways rooted in symbolic interactionism, a major theoretical perspective in sociology that emphasizes the subjective meaning of human behavior and social processes. Symbolic interactionism assumes that people act toward things, including others, on the basis of meanings developed through social interaction, and that such meanings are continually reconstructed through an interpretive, sense-making process (Blumer 1986; Snow 2001). Drawing from this theoretical fountain, Becker articulates a way of thinking about artistic production, distribution, consumption, and legitimation that speaks to but can be applied beyond the arts, revealing a general schema for organizing the social world of actors, activities, and the conventions through which collective production is accomplished and meaning is assigned. Art worlds, according to Becker, refer to the cooperative networks of actors oriented around the creation and distribution of particular works that its constituents consider to be *art*.

Art worlds do not have clear and static boundaries, nor are they wholly distinct from one another, or from other parts of a society. An individual may belong to multiple art worlds simultaneously, yet perform different functions within their respective cooperative networks and, further, receive different degrees of acclaim—or no acclaim at all. In particular, the boundaries of a given art world and the valuation of particular individuals and their contributions also shift in response to the introduction of, among other things, new technologies, new ways of thinking, and the emergence of new audiences.

In Becker's view, art worlds should be understood as social systems, networks of people "whose cooperative activity, organized via their joint knowledge of conventional means of doing things, produces the kind of art works that art world is noted for" (2008, xxiv). As van Maanen (2009) has noted, collective (or cooperative) activity and conventions are the twin core concepts of Becker's analysis. However, to these two key concepts, we would

add an implicit but no less important emphasis on the matter of reputation and status, or the relative legitimacy afforded to certain people, processes, and products in art worlds. Becker's final chapters take up "Change in Art Worlds" and "Reputation," and it is in and through such fluctuations and negotiations that status becomes a preeminent concern. For how change in art worlds occurs, and with what implications for the reputational character of art and artist, are of central importance for thinking about journalism in a time of turbulence.

Although Becker devotes great attention to the distinction between "art" and "craft" in his book, we find that discussion to be nonessential for the purpose of this chapter. We adopt Becker's proposition that art (or, more broadly, exceptional work) is defined not by the presence of certain aesthetic qualities but by whether members of a given world consider specific practices or products as being artistic in nature. That is, as Becker argues, rather than seeking out particular attributes, the analyst should "look for groups of people who cooperate to produce things that they, at least, call art" (2008, 35). While there is ample evidence that many journalists consider their work to be a kind of art (for examples, see Kerrane 1998; McNair 2005; Merrill 1993), what is most crucial to this chapter is the determination of what and who are considered to be ordinary and extraordinary—that is, what should be considered mundane support work and what should be considered something more, or what gets to be called "creative" and what is considered merely "technical." Thus, to not distract from this core aim, we focus here simply on "worlds" rather than "art worlds" while staying true to Becker's insights and using them to study changes in technologically oriented forms of journalism.

Key Concepts for Understanding Worlds

Central to Becker's analytic framework is the concept of *collective activity*, or the notion that art is the result of cooperation by multiple individuals. He contends that there are a series of activities that "must be carried out for any work of art to appear as it finally does" (Becker 2008, 2). Put differently, if certain activities were not executed, the work might occur in some other fashion, but it would not be the same work. Becker offers a provisional list of regular activities in the production of art, from the development of an idea, to the securing of supporting activities (e.g., copy editing), to winning the appreciation of an audience. This process culminates with the generation and maintenance of the rationale that those activities make sense and are worth doing. It is this final activity that yields the justification for why something is art, perhaps even good art, and explains its value to

society. Ultimately, such a series of activities establishes cooperative links that are central to the production of notable work. Becker writes, “The artist thus works in the center of a network of cooperating people, all of whose work is essential to the final outcome. Wherever he depends on others, a cooperative link exists” (2008, 25).

In order to facilitate the requisite interdependence, *conventions* must be developed. Becker defines conventions as “earlier agreements now become customary” that “cover all the decisions that must be made with respect to works produced” (2008, 29), or “the ideas and understandings people hold in common through which they effect cooperative activity” (2008, 30). Conventions, which may be likened to norms, are important because they “dictate” the materials and abstractions to be used as well as the form in which those materials and abstractions will be combined, and they “regulate” the relations between the creator of notable work and his/her audience (Becker 2008, 29). Actors within a particular world, such as artists, may, and often do, break convention in order to stand apart or feel less constrained. However, in setting themselves apart, those actors run the risk of becoming marginalized, seeing the circulation of their works limited, or having the valorization of their talents decreased.

A final concept central to Becker’s analysis is that of *reputation*. Reputations arise from consensus-building within the relevant world. That is, an individual’s reputation is not something created by that individual, but rather by agreement among the various members of that world. Becker writes that, for works, makers, schools, genres, and media, reputations serve as “a shorthand for how good the individual work is as one of its kind, how gifted the artist is, whether or not a school is on a fruitful track, and whether genres and media are art at all” (2008, 362). Put differently, individuals’ reputations are of import because they are central to the value accorded to them and their output.

Building on Becker: Shifting from Reputation to Status

The concept of reputation offers a useful starting point, but it is perhaps prudent to adopt the broader lens of *status*. Specifically, reputation is an important part of setting oneself apart from peers. However, the function that a person plays within a cooperative network is also important to determining that value. Within a given network, for example, the value accorded to an ordinary cellist and his abilities may exceed that of a renowned sound engineer. Status is therefore conferred as members of a given network classify certain forms of work as being more valuable than others—and, in turn, deem certain practitioners and their talents as more essential than others.

Although the production of notable work requires cooperative effort around shared conventions, making everyone and everything important, the concept of status reinforces that not all jobs and functions are created equal: members of a given world place different valuations on different forms of work and the actors associated with them.

Status, in turn, influences the all-important allocation and management of resources. This is true both of material resources (e.g., funding, equipment, and physical space) and social resources (e.g., delineating core and support personnel, and valuations of expertise). It determines who has access to what kind of resources, how such resources may be expended to produce and distribute “noteworthy works,” and in what manner future resources are likely to be gained by pursuing a particular course. Ultimately, status gives shape not only to what the work looks like, but if it is to be considered exceptional at all (i.e., as art). Notably, and consistent with the core tenets of symbolic interactionism and Becker’s application of art worlds, status is not singularly possessed but rather is a persistent negotiation among various parties to the production, exhibition, and reception of things that come to be viewed as exceptional.

Worlds of Technologically Oriented Journalism

Viewed through Becker’s lens, journalism is comprised of distinct worlds forming around its various genres and practices. For example, sports journalism is a particular kind of journalism compared to investigative journalism, underscored by their separate professional associations—the Associated Press Sports Editors (APSE) in the case of sportswriters and Investigative Reporters and Editors (IRE) for investigative journalists. Similarly, these distinctions may be oriented around functions and practices that may be spread across different types of journalism, as evident in professional associations such as the Society for News Design (SND) for designers and the National Institute for Computer-Assisted Reporting (NICAR) for computer-assisted reporters.

While these distinct worlds surely share certain components and constituents—e.g., through networks such as the Society of Professional Journalists (SPJ), connecting journalists across domains—not only are their conventions distinct but also the reputation and status accorded to actors varies across them. For example, Nate Silver and his *FiveThirtyEight* website may command no special attention in a world oriented around narrative or literary journalism, even as they are held in very high regard in the data journalism domain. Similarly, while the inverted-pyramid style of

storytelling may be conventional in the data journalism world, it is widely rejected in the narrative journalism world.

It is important to note here that such worlds are dynamic, changing continuously. They sometimes change gradually, through drift—minor shifts that do not require significant reorganization of cooperative structures and activities—or in a more substantive manner that requires participants to learn and do different things. Sometimes, they change abruptly and in a disruptive manner, a revolutionary process that demands major changes to the character of the works produced or the conventions employed. A change may be said to be revolutionary when “one or more important groups of participants find themselves displaced by the change, even though the rest remains much the same” (Becker 2008, 307). To be sure, Becker clarifies that not every pattern of cooperative activity needs to be changed for a revolutionary change to occur, and that for some members of a particular world, a given change may not be revolutionary at all.

In some cases, changes may be comprehensive enough to warrant the creation of an entirely new world—and as some worlds come into being, others dissolve. In particular, worlds may emerge with the development of new concepts and ways of thinking, as with the novel, which emerged partly as a result of the idea of “formal realism” as a mode of discourse in fiction (Watt 1957), and three-dimensional photography, which emerged as a result of the stereoscope (Becker 2008). Worlds may also emerge with the development of a new audience, with the artistic work itself remaining largely unchanged but new distributional arrangements allowing new markets to be tapped, as with the “‘new’ rock music of the 1960s [that] resembled what had preceded it” (Becker 2008, 313).

Technology Change in Journalism

One key driver in the emergence and the demise of worlds is technology, as innovations make new art products and distributional arrangements possible, though not necessarily inevitable (Becker 2008). As scholars have observed, journalism has been subjected to several fundamental changes in recent years—changes that are more revolutionary than gradual under Becker’s conceptualization. For example, newspaper companies in many developed economies, long the largest employers of journalists, quickly transformed from cash cows to risky properties during the crisis of the mid-2000s, leading to massive job losses, a focus on restructuring, and growing pressure on newswriters to do more with less (Picard 2011; Soloski 2013). Meanwhile, competition for audience attention in the media environment has intensified amid the growth of digital-native news sites, mobile and

social media, and viral content providers, even as users themselves have gained greater opportunities for collectively and affectively shaping their news experience (Papacharissi 2015).

As Picard (2014) has noted, these and other changes—changes that have been greatly influenced by technological innovations—are fundamentally altering the nature of newswork, reshaping institutional logics, and leading to the emergence of new modes of news production. For example, Picard points to the rise of a service mode: news products are transformed into news services, content is streamed across platforms, and syndicated material, user-generated content, and linkages with other news providers all become increasingly central to a news organization's operation.

The Worlds of Ambient, Data, and Algorithmic Journalism

This shift to a service mode has led to, and is evidenced by, the growing importance of digital curation and aggregation skills. As ambient journalism, or a form of journalism that focuses on collecting and communicating news information drawn from streams of collective intelligence (Hermida 2010), has gained legitimacy, and as social media has become an increasingly important source of news (Anderson and Caumont 2014), a distinct world may be said to be developing. Within this world, the ability to efficiently sift through large volumes of information and quickly assess quality are demonstrations of skill, and the simple messages—sometimes no longer than 140 characters—that synthesize that deluge of information and break through the noise serve as exceptional works. These abilities are increasingly desired in job ads, as journalists are ever more expected to manage virtual communities, not only to encourage dialogue around stories and promote their circulation but also to unearth original information (Bakker 2014).

Another notable technologically supported development is the growth of data journalism (Fink and Anderson 2015; Howard 2014). As Coddington (2015, 343) puts it, “the goal of data journalism is to allow the public to analyze and draw understanding from data themselves, with the journalist's role being to access and present the data on the public's behalf.” As such, data journalists seek to identify stories in data and/or tell stories through data. This process requires that the journalist not only be familiar with traditional skills of journalistic storytelling, but also have some familiarity with data structures and databases, statistics and statistical software, and, in many cases, design and visualization utilities. In response to these developments, data journalism courses have been introduced to the curricula in journalism schools (Splendore et al., 2015). These courses emphasize

technical skills, such as how to scrape data, write SQL queries, and create visualizations using Google Fusion, Tableau, and related software.

These developments can be seen as part of a deepening dependence on digital technology in newswork broadly (Lewis and Westlund 2016). In addition to the proliferation of technologically *supported* practices, the field has also seen the emergence of technologically *oriented* developments such as algorithmic (or computational) journalism (Anderson 2013; Young and Hermida 2015). Algorithmic journalism involves “the application of computing and computational thinking to the activities of journalism including information gathering, organization and sense-making, communication and presentation, and dissemination and public response to news information” (Diakopoulos 2011, 1), and emphasizes the abstraction and automation of work (Coddington 2015; see also Stavelin 2014). Automatically rendering (natural) language from computational representations of information, algorithms have been used by start-ups to generate stories about sporting events and public financial disclosures (Dörr 2015; van Dalen 2012). Even mainstream news organizations such as *The Los Angeles Times* have used algorithms to automatically write blog posts about homicides in the area and populate a dynamic map (Young and Hermida 2015). Altogether, the infusion of increasingly technologically dependent forms of work (cf. Powers 2012) complicates traditional labor dynamics at the intersection of human and machine in newswork, leading to questions about how to conceptualize emerging relationships among social actors and technological actants in journalism (Lewis and Westlund 2015; Lewis and Westlund 2016).

Changes in Status

Ambient journalism, data journalism, and algorithmic journalism may all be viewed as distinct worlds—even as they overlap, as worlds do to varying degrees (see table 6.1). Specifically, they involve particular logics and skills, and their abilities and contributions receive distinct rewards. Prominent actors within each of these worlds are rewarded with greater status within the given world and are seen as being more valuable to their organizations. For example, Andy Carvin’s numerous invitations to speak at conferences serve as an example of his increased status in the world of ambient journalism (see Hermida, Lewis, and Zamith 2014). Similarly, Paul Lewis from the *Guardian* and Ravi Somaiya from the *New York Times* gained prominence for their use of social media as a reporting tool during the London riots (Vis 2013). Furthermore, the emergence of prizes such as the Shorty Awards’ Best Journalist in Social Media and the *Press Gazette*’s Social Media

Table 6.1

Examples of Emerging Technologically Oriented “Worlds” of Journalism

	Ambient Journalism	Data Journalism	Algorithmic Journalism
Collective Activity	Optimizing news for a social media environment	Making data more public, transparent, and interactive	Applying automation to expand the space of news production
Conventions	Using social media as key framework for gathering, verifying, and sharing news	Applying social scientific methods to identify patterns in sets of data	Employing computer code to automate traditional journalistic functions
Status	e.g., Andy Carvin’s lauded Twitter-based coverage of the Arab Spring	e.g., Nate Silver’s FiveThirtyEight as a prominent model in the field	e.g., The Associated Press relying on automated reporting to cover quarterly financial reports

Journalism Award, as well as new graduate degrees such as The City University of New York’s MA in Social Journalism, help to delineate and legitimate a unique world.

In a similar vein, distinct news sites have emerged around data journalism, from subunits in large media organizations such as the *New York Times*’s The Upshot blog and the *Guardian*’s Data Blog, to websites such as FiveThirtyEight and Vox. In particular, Nate Silver, founder of FiveThirtyEight, has received extensive praise from organizations such as the Nieman Foundation for Journalism and the International Academic of Digital Arts and Sciences for his ability to effectively leverage, contextualize, and tell stories through data. Additionally, the *Columbia Journalism Review*, in partnership with the Tow Center for Digital Journalism, started in 2012 a dedicated column to “analyze, interrogate, and explore emerging work” in the area of data journalism (Codrea-Rado 2012). At NICAR’s annual convention each spring, the leading lights of data journalism—in many cases journalists-turned-technologists, working for news applications teams at the likes of ProPublica, *The Chicago Tribune*, and NPR—are widely lauded as the next generation of computer-assisted reporters: artists in a world where data meets storytelling.

In the realm of algorithmic journalism, the case of the *New York Times*’s Ken Schwencke illustrates the growing valuation of journalists (and non-journalists) who are able to automate portions of their work. Schwencke,

then at the *Los Angeles Times*, was celebrated for programming an algorithm that scanned information from the U.S. Geological Survey, identified newsworthy earthquakes, and then automatically wrote a headline and story, appended a map, and published it to the newspaper's blogging platform. This allowed Schwencke to beat his competitors as he slept, with a blurb that flowed much like a wire story. The Global Editors Network, a community of editors-in-chief, has featured sessions on algorithmic journalism in their recent annual conferences, including one talk entitled, "Robot Journalism: Don't Wait 'Til It's Too Late." Similarly, the 2015 meeting of SRC-CON, "a conference for developers, interactive designers, and other people who love to code in and near newsrooms" (see srccon.org), listed multiple sessions on employing computational methods (e.g., machine learning) in journalism, selecting thought leaders in that world to headline those sessions. The Associated Press, in particular, has received a great deal of attention for employing an algorithm to write more than 12,000 articles a year using data from corporate earnings reports. Graduate programs in Computational Journalism have also emerged in prominent journalism schools, such as Syracuse University in the United States and Cardiff University in the United Kingdom. Proclamations that, within a few years, a computer program will win a Pulitzer Prize—the de facto mark of artistry in the field of journalism—ultimately point to the growing valuation of the ability to program algorithms to do journalistic work (Lohr 2011). More importantly, these developments point to the emergence of a world oriented around creating algorithms that can embody the ideals of journalism.

A common thread throughout these examples is that the mastery of technological actants is being increasingly viewed as valuable work within these worlds and within journalism more broadly, and those individuals who possess such skills are the beneficiaries of elevated status. A parallel to this development within conventional art worlds may be found in Becker's brief description of the evolution of sound mixing as an art form. Becker points to the example of the recording engineer and sound mixer, once largely viewed as technical support staff whose skill was measured by their ability to capture the sounds of a performance. However, as Becker notes, the introduction of high-fidelity recordings and multitrack recorders enabled those individuals to record different sound elements separately, manipulate them, and combine them in different ways. Soon, sound mixers were given prominent credit on record albums, and sound mixing itself began to be viewed as a distinct artistic activity requiring special talent. As Becker (2008, 18) puts it, "sound mixing, once a mere technical specialty, had become integral to the art process and recognized as such."

Within the realm of journalism, similar shifts may be found as individuals with technical abilities move from the periphery of news organizations to more central positions. For instance, as individuals like Aron Pilhofer shift from being “that nerd in the corner you’d call to help with a spreadsheet and maybe troubleshoot your email” (Pilhofer 2010, para. 4) to becoming executive editor for digital at the *Guardian*, such transitions reflect the recognition of their ability to effectively utilize technological actants. In particular, these abilities allow the newswriters who possess them to put out news products—such as interactive, data-driven visualizations—that can be more easily differentiated in a crowded market, either because of their individual labor or their significant roles in larger teams. And, the demand for such technical skills is evident on job boards such as News Nerd Jobs, which states up front, “The news business needs people who can code in the public interest and build the digital news products of tomorrow. If you can code, there’s a job for you.” Whether such technical work qualifies as art or art-like may certainly be contested. The prominence and prestige—indeed, status—afforded to such individuals, however, is nevertheless apparent. Newswriting may depend on cooperative activity around shared conventions, but the glamor associated with any particular role is always in flux—and, at the moment, it clearly favors the so-called nerds and ninjas, even those untrained in journalism, whose skills are so dearly coveted. Not surprisingly, then, resources have followed, as major news organizations engage in an arms race for top developer talent and build out, for example, teams of “data grinders and designers” (Phelps 2012, para. 1) focused on perfecting the art of exploring news through data visualization (Howard 2014).

Additionally, there is increasing recognition, driven largely by the emergence of discourse around big data as well as the growing availability of publicly accessible data (Lewis 2015), that individuals with technical know-how can lead a shift away from unrepresentative reporting that focuses on exceptional cases and toward more generalizable reporting that focuses on central tendencies. For example, as one journalist at the *Los Angeles Times* reported to Young and Hermida (2015, 390): “Mr. and Mrs. Outlier get covered really well in crime news. ... But as you know, that’s an incredibly small fraction of the amount of crime that happens. ... But what data can bring us ... is to try to give some fuller sense of crime as a phenomenon in the city.” The ability to tell comprehensive stories that reflect, with greater accuracy, the incidence and relative importance of newsworthy matters thus becomes recognized as valuable, if not artistic, labor.

Finally, technology has contributed to the commoditization of news stories, and thus reconfigured the status associated with writing a conventional news narrative. The isomorphic tendencies of news organizations have become heightened in a media environment that encourages minute-by-minute monitoring, leading to more and more homogenous coverage (Boczkowski 2010). One consequence of this homogeneity is the growing realization that news stories, in their current inverted-pyramid structure, are quite often redundant and less distinct from one another, as any Google search of a major current event will reveal. It's not so much that news routines have changed greatly—pack journalism has been around for many decades—but rather that the Web platform has more fully revealed the institutionalized nature of news production (Ryfe 2012). The upshot is that being able to write a conventional news story simply may not count for as much anymore; the status has declined as the differentiation has diminished. Not helping matters for traditional news writers is the rise of automated journalism, or “algorithmic processes that convert data into narrative news texts with limited to no human intervention beyond the initial programming choices” (Carlson 2015, 417). The drama playing out amid the growth of Narrative Science and other providers of robot-written news, as Carlson shows, reveals what happens when established conventions become disrupted: the relative need for (and thus status of) particular forms of human labor is called into question, leading to concerns about the authority of journalism and its normative role in a larger sense.

The Contributions of Worlds as a Framework

It is important to acknowledge that what we have hypothesized about ambient, data, and algorithmic worlds of journalism is precisely that: a series of *hypothesized* conceptions, developed from the literature as well as our own observations and fieldwork at various stages from 2011 to 2015. As such, these surmised worlds of journalism, among others that exist or are emerging, deserve investigation to clarify their actual boundaries, constituents, and implications. Even in their hypothesized form, however, these conceptions serve as provocations for a new way of thinking about the journalism–technology intersection. Namely, they orient attention to the shaping influence of (and influences shaped by) distinct but interlocking domains of collective activity, conventions, and status conferral. In this way, a “worlds” view brings at least three key considerations in the study of journalism into greater focus:

1. that journalistic products, including its exemplary works, are the result of the combined labor of a large set of social actors and technological actants that is more heterogeneous than typically is acknowledged in the literature;
2. that such cooperation is enabled by conventions, which both facilitate and constrain the creation of particular works; and
3. that the resulting arrangements are constantly in flux, with the valuation of particular actors, works, and forms of labor differing between worlds, even as they contribute to the general understanding of what we call journalism.

One of Becker's (2008) key contributions in *Art Worlds* is to puncture the myth of the artist toiling alone. As he shows, the artist benefits from a wide ensemble of social and material forms of support, including (and crucially so for this chapter) technicians and the technologies they manage in the service of objects deemed to be art. As Lewis and Westlund (2015) have proposed, inquiries into the processes guiding change in journalism should be at minimum conscious of the different social *actors*, technological *actants*, types of *audiences*, and work-practice *activities*—the Four A's—that are interconnected in the production of both ordinary and extraordinary journalistic products. For example, as Braun (2015) has documented, the creation and distribution of a single video on MSNBC.com involves the use of multiple technologies developed by a diverse set of actors that yields a particular set of affordances—many of which are unintentional and seemingly counterintuitive—for both news producers and consumers. Beyond process, even something as simple as an interactive crime map requires varied expertise. For example, Kirk (2012) points to eight hats of data visualization design: the initiator, the data scientist, the journalist, the computer scientist, the designer, the cognitive scientist, the communicator, and the project manager. Few individuals possess the expertise necessary to effectively wear all eight hats; rather, as Smit, de Haan, and Buijs (2014) note, collaboration among these actors—who generally have different backgrounds and priorities—is key to successful visualizations.

Journalism has always involved a diverse set of activities performed by myriad actors and actants. Nevertheless, technologically oriented worlds like ambient, data, and algorithmic journalism often involve actors, actants, and activities that have received limited attention in the literature, such as programmer-journalists creating JavaScript code to build an interactive graphic or using machine learning to extract key information from a large cache of documents stored in a relational database (for examples and

discussion, see Usher 2016). Moreover, such worlds typically cater to particular audiences, whose appreciation can be readily measured through nonpurposive forms of feedback (e.g., article view counts derived from audience analytics; see Zamith 2015) and purposive forms of feedback (e.g., reader comments on articles; see Zamith and Lewis 2014). Such feedback can be used to justify particular logics that guide and distinguish those worlds.

In addition to highlighting the inherently collaborative nature of the production of artistic products, Becker (2008) emphasizes the role of conventions—agreements on how things should be done, which emerge from the interactions among the actors within a given world. While scholars have long called attention to the importance of routines in engaging in journalistic production (e.g., Tuchman 1978), a worlds perspective highlights the fact that conventions may not translate across worlds, or be decided by the same ensemble of actors and actants to fit the same set of activities. Indeed, as Lewis and Usher (2013; 2014) have indicated, many of the entrants into technologically oriented worlds follow logics that emphasize iteration and “tinkering,” thereby promoting rapid development, fluidity, and experimentation rather than careful consideration toward a static, polished product. Similarly, those logics underscore the importance of leveraging collective intelligence by increasing and facilitating interaction. Crucially, as we emphasize below, it is those individuals—many of whom have little, if any, background in journalism—who are increasingly developing the systems and best practices, and in turn shaping the conventions, that guide technologically oriented worlds.

Finally, Becker (2008) points to the very fluid nature of such arrangements, and the discrepancies in the reputational cachet accorded to a given individual and product across segments of journalism. This, we argue, is key for understanding certain developments in journalism, especially when the observation is extended to account for the different roles involved in particular arrangements. Applying these insights to journalism and its increasing technological orientation, it could be argued that changes in media technologies (e.g., the rise of algorithms and automation, and the development of sophisticated Web frameworks) and the personnel connected with them (e.g., the need for technologists to maximize the utility of such technologies) may lead to new perspectives about what counts as a distinguished form of creativity and who counts as a distinguished creator.

Of course, this development need not be a displacement. Longstanding forms of news writing, such as literary journalism, have not suddenly gone

out of style—and, within their respective worlds, such journalisms retain many of their same conventions and forms of reputational authority. However, as many news institutions reorganize themselves with an eye toward information technology, actors and activities once seen dismissively as “support” or “technical”—on the margins of journalism—increasingly move closer to the core enterprise of producing news. These moves strengthen the economic and symbolic resources that are available to such individuals, especially as the worlds of ambient, data, algorithmic, and related forms of technologically oriented journalism gain popularity and credibility. Such moves also simultaneously make a claim to other worlds of journalism about the relative esteem and aesthetic appreciation that ought to be afforded to technologically oriented actors and their “technical” work. Indeed, as Nielsen (2012, 975) points out, increasingly, “technologists do not simply execute decisions already made by journalists and managers. They play an active role, bringing not only technical know-how ... but also their own values and views on how [journalism and technology] ought to be done.”

A worlds perspective therefore highlights that such determinations—of values and evaluations, of aesthetic acclaim and authority—are in constant negotiation and result from the interactions among the members of particular worlds. In technologically oriented worlds of journalism, this calls attention to the importance of studying both formal gatherings, such as online learning spaces designed to bring together journalists and technologists to develop open-source innovations for news (Lewis and Usher 2016), and their more informal counterparts, such as “meetups” among hacks (journalists) and hackers (coders) in many large cities around the world (Lewis and Usher 2014). Such interactions, facilitated online and offline, within and across institutional boundaries, help unite core members of worlds and, through such interactions, distinguish virtuosos, reconfigure conventions, and ultimately recognize exceptional work. However, such negotiation, it must be noted, also occurs beyond this immediate group, encompassing the symbolic interactions among actors ranging from the server administrators at content delivery networks to those who consume news. This larger negotiation is the continual struggle to define journalism, to shape the social boundaries around what counts as news and who counts as a journalist, as well as why such an occupation may be democratically useful.

Thus, valuations arising from worlds of journalism, while localized in their own right, matter by association. In the aggregate, in the network of distinct but interconnected worlds, meaning-making and shared

interpretations established in one world both influence and are influenced by similar processes playing out in another. The broad character of this thing called journalism, we might say, is a bricolage of multiple worlds within it, each developing particular forms of collective activity, conventions, and status-giving that work in relation to (though not necessarily in harmony with) one another. In this way, to say that journalism is becoming technologically oriented is to recognize the rise and growth not simply of certain work tools and techniques, but indeed of *technologically oriented worlds that give symbolic meaning to the people, practices, and products underlying those developments*. As certain social actors, technological actants, and work activities attain greater prestige and position relative to others, the modification of existing worlds and emergence of new ones comes into view, providing an entry point for exploring what a technological orientation means for changing the nature of journalism: its taken-for-granted assumptions, institutional bearings, and normative purposes in society.

A “worlds” perspective thus offers journalism studies scholars a lens through which they can investigate and interpret shifting views on the creative nature and worth of particular actors, actants, and activities once viewed as being predominantly technical and supportive, while highlighting that journalism is comprised of complex networks of labors and laborers, guided by particular conventions, that produce and legitimize works. However, as we have illustrated, there is room to build upon Becker’s insights. For example, while Becker emphasizes that all actors and activities are of equal importance to their worlds—he aptly contends that art simply would not be the same without the contribution of each component in the network—we have argued here that fluctuations in and across worlds are better understood by adopting a broader lens. Specifically, the view that we have outlined suggests that status, more than reputation, matters particularly for understanding how symbolic meanings are interpreted, translated into conventions and value judgments, and ultimately rendered into resource allocations. In effect, to understand worlds, art or otherwise, means unpacking not only their collective activities and conventions but also their forms of give-and-take around status and the positions (real or symbolic) of particular actors, actants, and activities within networks. That is, how worlds accord status to certain people, practices, and products ultimately reveals *who, how, and what* such worlds deem exceptional and worth emulating; that, in turn, shapes the fundamental orientation of worlds and their implications for interlocking aspects of social life.

Note

1. Becker (1982/2008) makes a point of articulating “art worlds” in terms of *collective* activity, which, as we discuss later, refers to cooperative networks of people and processes that bring about something deemed artistic. In drawing on his framework, we describe “worlds” of journalism using similar terms. However, we also recognize that *collective* can imply a degree of organized planning that may not be apparent in the more accidental forms of *collaboration* or *connection* that occur as various actors and activities come into contact with one another in and through emerging journalisms (such as the three discussed in this chapter: ambient, data, and algorithmic journalism). Such interactions, particularly at the boundaries of emergent and existing worlds, may be ad hoc and spontaneous. When repeated over time, however, they may mature into more formal conventions, akin to Bourdieu’s notion of *habitus* (Benson and Neveu 2005). In a related sense, though one focused on the context of social movements and political organizing, Bennett and Segerberg (2012) have suggested that, in a digital media context, the familiar logic of *collective* action may be giving way to a logic of *connective* action as groups and individuals engage one another more loosely via social networks. Worlds of journalism, too, are characterized by connection among a range of social actors, facilitated by connective technologies like social media; nevertheless, such worlds also exhibit the kind of cooperative efforts around shared intentions that are reflected in Becker’s use of the term *collective*.