



CómoSciWri: Resources to Help Science Writers Engage Bicultural and Bilingual Audiences in the United States

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A HISTORY OF OVERLOOKED PERSPECTIVES

As translators of technical knowledge and research discoveries, science writers have opportunities to affect the discourse of human society. Accordingly, science writers in the United States—including journalists and public information officers (PIOs)—have an obligation to communicate science to the nation's increasingly bicultural and bilingual population.

Such considerations and approaches toward science writing are not a novel need in the United States. As in other U.S. media niches, science writers and science communicators in the majority culture have long overlooked Native American and African American perspectives. A majority culture is the one with power and privilege in a society or other groupings, such as professions and institutions. It manifests as a dominant culture that sets the expectations and valuations of what is acceptable as norms. This has implications in science and research, as when a majority culture sets the terms for what is valued without the consideration of other cultural identities (Alegria et al., 2010).

Science writing in the U.S.—from journalistic stories to institutional content—have largely relied on references, examples, and narratives that resonate best with white American audiences. People of color represented just 22.6% of the workforce in U.S. newsrooms in a recent survey [American Society of News Editors (ASNE), 2018]. This bias has consequences (Kueffer and Larson, 2014). When editors and writers overlook the perspectives and narratives of oppressed peoples and minority cultures, they miss reporting on fallacies or prejudices within the scientific endeavor itself. The history of science and the media in the U.S. are littered with examples of “Columbusing” that devalue, erase, or co-opt the perspective of colonized, Indigenous, or formerly enslaved peoples (e.g., discoveries resulting from medical experimentation on African American bodies; failing to credit traditional ecological and agricultural knowledge held by tribes and slaves; overlooking the disproportionate exposure of migrant workers to pesticides; Salinas, 2014; Judkis, 2017). Equally culpable are examples of “Hispandering”—when a writer crosses the fine line from acknowledging to patronizing an ethnic group through the writer's choice of narrative and language (e.g., using a Cultural Deficit Model that devalues or erases the cultural assets and resources of a demographic group while emphasizing its deficiencies and failings, often in stereotype; Salkind, 2008).

CONVENING “COMMUNICATING CIENCIA”

Science writers in the U.S. can right these wrongs by improving their craft and recalibrating their storytelling lens, and acknowledging the historicity and perspectives of science beyond that of the majority culture. In an effort to educate more U.S. science writers on diversity, equity, and inclusion (DEI) considerations for their craft, we convened a pair of workshops in 2016 and 2018 at the annual meeting of the National Association of Science Writers (NASW), a major U.S. professional society of science journalists, PIOs, and other communicators, with more than 2,000 members, of which 88% identify as white [National Association of Science Writers (NASW), 2018].

As we set out to compile best practices for inclusive and culturally-sensitive reporting, we decided to use the U.S. Latinx and Hispanic experience as a focusing lens, given that “Hispanic origin” has been one of the fastest growing census demographics in the U.S. in recent decades, second only to Asian Americans (Flores et al., 2019). In particular, we gleaned lessons from public outreach and informal science education practitioners, who have had to be relatively early adopters of DEI frameworks by nature of their direct contact with cultural and demographic shifts in public audiences.

Here, we summarize the recommendations compiled at our two NASW workshops. Titled “Communicating Ciencia” (Twitter hashtag: #CómoSciWri; Website: <http://www.communicatingciencia.org>), we presented practical tips woven from journalism, public information, and public outreach, then led participants through interactive exercises (Figure 1) to cement their understanding. While they focus on the U.S. Latinx experience, these best practices are broadly transferable to science writing for identities and communities rooted around any U.S. cultural demographic. The strategies suggested here can also be applied by scientists and other professionals who write for a general audience.

ACKNOWLEDGE THE LANGUAGE OF DIVERSITY

Science writers must first grasp the terminology of U.S. Hispanic and Latino identities. In the U.S., *Latino* refers to cultures stemming from colonialism-created Latin America—encompassing both Spanish and Portuguese influences and languages—whereas *Hispanic* refers specifically to cultures stemming from Spanish colonialism. And though collectively influenced by Spanish imperialism, Spanish-speaking cultures are not homogenous, and writers must take care to recognize cultural and historical nuances across communities and identities (e.g., Cubans vs. Puerto Ricans vs. Peruvians). For example, the identity *Chicano/Chicana* (alternatively spelled *Xicano/Xicana*) is a term used by some Mexican-Americans and Latinos, particularly those with Indigenous heritage. More recently, these descriptors have taken on gender-neutral forms, such as *Chicanx* or *Latinx* (Gutiérrez and Almaguer, 2016; Simón, 2018).

Equally important is the proper inclusion of diacritical marks and alphabet letters when writing words and names of Spanish

or Portuguese descent—the omission of which may change the meaning of entire words (e.g., *ano* vs. *año* in Spanish). Another example is personal names, which should reflect the writing conventions of that culture (e.g., for Spanish names, including both paternal and maternal surnames in subsequent mentions of a person referenced in a story).

Other such distinctions in language and identity terminology exist for other U.S. cultures, be they Japanese American traditions or Native Hawaiian traditions (Peryer, 2019). It is the responsibility of science writers to acknowledge these spellings and details in their work.

EMBRACE THE AWKWARDNESS

Indeed, communities are not faceless crowds. Like their readers, the communities that science writers cover are not homogenous. The so-called “general public” is filled with diverse, real faces, each with unique intersections of personal identities and cultural understandings. Science writers must take care not to make assumptions about a community or culture. No matter how constrained the medium (e.g., a 30s radio piece) or how broad the scope (e.g., national attitudes toward gene therapy), science writers should keep cultural nuances in mind when researching potential stories, and when listening and speaking to their sources.

Science writers will likely find themselves in trouble if they simply “parachute” into a community they are unfamiliar with. One way to avoid these pitfalls is to find a “fixer”—someone familiar with a community’s members, history, and voices, and who is trusted by members of that community. This might entail identifying a trusted community member or asking for a recommendation for a community liaison from a colleague that has worked with that group in the past. Collaborating with knowledgeable sources allows a writer to fully uncover and grasp how an issue pervades and impacts a community, and these ambassadors may also unlock access to more reticent interviewees.

Accordingly, as outsiders to a community, science writers must simply embrace the awkwardness inherent in these situations. By expressing humility and asking respectful questions, science writers can parlay their lack of knowledge into a genuine curiosity to learn—defusing hesitation among community members and possibly encouraging them to reveal important insights they were previously unwilling to share.

ACTIVATE CONNECTIONS

One way science writers can gain further familiarity with a community is to partner with a museum or informal science center serving the geographic region of interest. Learn from these professionals who have been trained in outreach and education, and who by default are tasked with translating science to a diversity of visitor audiences.

Outreach staff can share their best practices for inclusivity and bridging cultural contexts. They can also act as fixers, given their role in engaging leaders, educators, and parents within a specific

#CómoSciWri Workshop Activity Example — Editing a Story

Read the following passage and analyze for inclusivity and cultural competency, as well as for readership engagement with regards to our regional demographics.

When Central Valley College environmental researcher Stephen Strange arrived in Stanislaus County, he saw a community in need. Trash littered local streams where immigrant children swam. Illegal trash burns and dumping dotted this rural landscape of predominantly farm laborers from Mexico, Guatemala, and El Salvador. But Strange found a ray of hope when he met Angelica Colon, a Hispanic graduate student who rose above her humble roots and walked into his lab one day.

Colon grew up in Stanislaus County, and became interested in studying plastics pollution after volunteering with a local environmental nonprofit while in high school. In the course of her internship translating health outreach messages for non-English speakers, she realized that plastic waste had infiltrated all aspects of life in her community: microplastics could be found in the makeup she used and in the fish she ate, while chemicals leached from the water bottles and frying pans her family used.

Questions to Consider:

- Are there elements in this copy that are patronizing or condescending?
- Are there elements that make the topic relatable to our readership?
- How might this narrative be improved?
- How might this reporting in general be improved?
- What other instructions would you send back to the reporter who wrote this?

FIGURE 1 | A learning activity conducted during the ScienceWriters2018 workshop “Communicating Ciencia” which asked participants to edit a sample passage for inclusion and cultural sensitivity.

community. And like science writers, outreach professionals have a need to break down industry vocabulary and jargon. Communicating in simple ways is key in any language—science writers and informal science educators or interpreters have much to share with one another in this regard.

However, outreach professionals often take additional steps to activate connections between their audience and a scientific topic. Beyond identifying their visitors’ personal, cultural, and geographical contexts, outreach professionals also endeavor to determine their audience’s preferred modes of idea sharing (e.g., social media, word of mouth, community convenings) beyond a museum’s brick-and-mortar walls. Science writers can certainly emulate this strategy when approaching a community or culture as outsiders, both in finding and engaging prospective interviewees and sources, and in where to disseminate and share their stories once published.

CREATE A COMFORT ZONE FOR LEARNING

Outreach professionals also are adept at creating a “comfort zone” for their visitors to learn and understand a concept. For one, outreach professionals realize that science may be a visitor’s third language. Scientific jargon already seems like a foreign language to most native English speakers. If a visitor already has English as their second language, then they may face additional difficulties

in unraveling yet another set of specialized vocabulary (Lemke, 1990).

This does not simply mean finding a corollary technical term in Spanish or Portuguese; the preferred solution is to give science a place in the visitor’s or reader’s world. Even if they are not a science enthusiast or scholar, visitors, and readers are informed citizens who make life decisions (e.g., healthcare, family, home maintenance) daily. By explaining scientific concepts within the framework of everyday activities, outreach professionals and science writers alike can create context that lets the visitor or reader discover the relevance of science to their lives, and say, “Science has a place in my world.”

Another way to identify and set this framework is to start with kids. Within any culture, children are focused on learning the fundamental contexts, norms, and pop references of that community. In making the science relatable to children within a target audience, science writers can often reveal trends and angles that also extend to adults.

RESIST INDIVIDUALISM

In fact, youth can drive changes to those very contexts, norms, and pop references. Hispanic and Latinx youth are increasingly pushing beyond singular labels to express their complex identities, reclaiming and remixing elements of their cultural heritage (e.g., Colombian), U.S. context (e.g., East Los Angeles), and individual intersection (e.g., queer) through music,

language, social media memes, and other creative expression. These trends of “hybridity” and “transculturation” underscore the importance of avoiding broad assumptions about what is “Hispanic” when writing about a community (Rodríguez-Valls, 2016).

These trends also are incredible opportunities for science writers. Immigrant communities—from descendants of African American slaves to Syrian refugees today—inevitably contribute more new elements to the majority culture than they take from it. Tracking these cultural changes can certainly help science writers be more inclusive in their craft, and may also help them anticipate broader cultural shifts in U.S. cultural contexts.

To identify, interpret, and embrace these shifts, science writers are once again counseled to resist individualism in their practice. We encourage science writers to find bicultural colleagues to collaborate with—learning and writing together, and ultimately sharing bylines. The process will push a writer’s potential and broaden their experience, and in turn improve the reach and depth of the published story or project. These collaborations should also extend to graphic communicators with bicultural and bilingual experience. Photos, infographics, and other visuals are helpful when communicating to audiences with a range of language fluency levels, and graphics and images are equally susceptible to cultural insensitivities and biases if assumptions are made.

TAKE A CULTURAL LENS TO SCIENCE

In closing, we encourage writers to take a cultural lens to science as a whole. This means defining culture not just within an ethnic or racial context, but also examining the culture of science as a profession and practice. For example, examining who is doing the science, and how a scientist’s cultural experiences might shape their approach, can add value to how a topic or discovery is reported and entice additional readers and audiences. Likewise, recognizing the culture and language of science itself—the limitations and structure of academia, its jargon, scholarly prestige, and its foundation in Anglo-American world-views—can help science writers better realize the assumptions embedded in the traditional Western view of the scientific endeavor, and better avoid assumptions or tropes that encourage prejudices and turn away potential readers (Herbers, 2007).

Demographic trends in the U.S. are bringing Hispanic and Latinx voices at the forefront, with African American and Native

American voices still seeking due coverage. Science writers must embrace these ongoing shifts in diversity, and do the work to understand the contexts and nuances that make each culture and subculture unique.

From embracing hybridity and transculturalism to activating community connections and applying a cultural lens to science, the approaches outlined above can help journalists and PIOs better communicate science in the United States. By identifying, acknowledging, and distinguishing language, historical, and social nuances across cultural and ethnic identities, science writers can engage more readers and amplify their reach. Simply put, they will write better stories, represent overlooked voices, and report more holistically on the research enterprise—and better fulfill their duty as society’s science translators.

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BL and BO organized the ScienceWriters2016 and ScienceWriters2018 workshops. BL led manuscript effort and wrote initial drafts. BO led editing, formatting, and peer-review response. All other authors contributed equally to this manuscript.

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SUPPLEMENTARY MATERIAL

Session slides and session handouts from the 2016 and 2018 Communicating Ciencia workshops are available as PDFs at <http://communicatingciencia.org>.

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