Chapter 14
Bioarchaeology and the Media: Anthropology Scicomm in a Post-Truth Landscape

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Introduction

Bioarchaeology outreach begins with a gay caveman. Not literally, of course, but those two words launched hundreds of headlines in dozens of languages in April of 2011. An anomalously buried Copper Age skeleton was discovered during an archaeological dig outside Prague in the Czech Republic, and a video interview with the lead archaeologist[1] effectively went viral because of the conflation of burial evidence with contemporary terms related to gender, sexual orientation, and ritual (Killgrove 2011). The game of media telephone began, with the *Telegraph* reporting the "First Homosexual Caveman Found" (2011) and the *Daily Mail* crowing that a "5,000-year-old Is Outed by the Way He Was Buried" (2011).

As the story spiraled, with more and more outlets engaging in churnalism,[2] anthropologists with their own scholarly blogs fought back against the onslaught of half-truths—and for the first time, the news media began to pay close attention. Having blogged for years, I dashed off a post on my platform, *Powered by Osteons*, with the tongue-in-cheek title "Gay Caveman! ZOMFG!" It was a mix of sarcastic takedown and informative critique, honed by my years of doing the same to the TV show *Bones*. The next day, heavy hitters in the field of anthropology outreach, paleoanthropologist Hawks (2011) and archaeologist Joyce (2011), similarly wrote

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[1] The video has since been taken down from presstv.ir, which is unfortunate as it was the only primary source material for the piece. The burial, as of this writing, has not been published in a scholarly journal. See also Chap. 10, for more information on this skeleton and the popular press reaction.

[2] Churnalism is the practice in which a journalist, blogger, or media outlet presents a press release or a story written by someone else as reported news, often with no changes or very few changes to the original piece. The term was coined nearly a decade ago. See Jackson and Moloney (2016) and Knight (2011) for scholarly takes on the practice as it relates to traditional journalism.

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posts about the head-scratching story. And *LiveScience* was the first press outlet to pay attention (Pappas 2011). Then *CNN* posted a story online (Gast and Aarthun 2011) but also ran headlines on their TV channel critiquing the "gay caveman" media circus. Soon, *Salon* (Williams 2011), *Jezebel* (Hartmann 2011), *Wired* (Johnson 2011), and other outlets picked up on the reaction from experts. And all of this happened to coincide with the dates of the annual American Association of Physical Anthropologists conference, where there was more lively discussion.

This example highlights two features—or perhaps they are bugs—of twenty-first-century science communication: first, the tendency toward churnalism and click-bait in an era of rampant defunding of impartial news organizations and a speed-of-light, ad-driven news cycle and, second, the importance of finding contemporary relevance in stories about the past. The question I want to focus on in this chapter is not how the media screwed up the "gay caveman" story, though. That is better left to scholars of journalism. Rather, the question that those of us interested in anthropology scicomm should concern ourselves with is *why* the "gay caveman" went viral and how we can replicate that dissemination with legitimate stories even in this post-truth era.

As anthropologists, we are trained to contextualize our research. The same can be done for the "gay caveman," which became news in April of 2011. Just 5 months prior, President Obama signed into law the repeal of the US military's "don't ask, don't tell" policy. Just 2 months prior, the US Department of State began allowing passports to list birth parents of either gender, rather than only mother and father. And a few months later, New York state would become one of the first to pass a marriage equality act. These were huge turning points that tapped into the growing public consciousness about and acceptance of LGBTQ rights. In this context, a small obsession with a solitary bioarchaeological skeleton makes perfect sense.

In the rest of this chapter, I outline the landscape of bioarchaeology journalism, unpacking the values that drive many of us to engage in scholarly public outreach and writing. I offer examples and tips for how to more effectively write and disseminate a piece of research, topical essay, or critique. But I have also provided suggestions for how anyone—including those who have neither the time nor the inclination to inject themselves into the media fray—can support scicomm outreach and help move the discipline of bioarchaeology forward to a more relevant future.

Anthropology Scicomm Values

It goes without saying that science communication is built on a platform of factual dissemination, with a goal of explaining scientific studies to a broad audience. But it is also about tapping into contemporary social issues, advances, and problems in order to demonstrate the relevance of science to that audience's lives. Some of the core values that underlie anthropology outreach are public intellectualism, community, teamwork, and diversity.

Public Intellectualism

We can start by asking, why talk to the public? Particularly in this new era where facts are dismissed and scientists viewed with skepticism and even outright contempt, why should we engage?

One reason relates to scholarly publications and issues with access (e.g., Lende 2012; Smith 2012; Killgrove 2012). Given the paywalls that we anthropologists find most of our writings behind, engaging in public intellectualism becomes a bridge between for-profit publishers and a large public—including fellow researchers with substandard libraries, independent scholars, and science journalists—that cannot access either our data or, perhaps more importantly, our interpretations of those data.

We should also be interested in using public intellectualism to present information outside of the ivory tower and to demonstrate its relevance to our understanding of humans today and in the past. Talking to the public means leaving the warmth and shared context of a scholarly community in an attempt to make inroads into a new one. That can be as difficult and scary as moving to a new state, changing jobs, or going into the field for a new research project. But as anthropologists, we also understand how to reframe and reinvent ourselves and our message depending on whom we are talking to. If we can draw on this training, we can be flexible public intellectuals who meet people where they are (Sabloff 2011).

Benefits of public intellectualism also accrue to us, not just the public, as we work to tap into contemporary social issues, advances, and problems, demonstrating how we can learn from the past (Wilcox 2016). Talking to and writing for the public teaches anthropologists to communicate across multiple platforms and to diverse audiences. By extending and bending your writing skills to different outlets, you increase your ability to speak to audiences across disciplines. In a multidisciplinary field such as anthropology, that skill is useful in everything from publishing in a way that multiple audiences can read it to developing a broader impact statement for a successful grant proposal (Andrews et al. 2005). The more people who can understand your message, the better that message propagates.

Public intellectualism has a long history in anthropology. Starting with Margaret Mead, anthropology had influence on public policy, as her work ranged through gender issues, race and intelligence, Native American rights, and cross-cultural habits in an era of world wars. She was elected to numerous scientific academies and posthumously awarded the Presidential Medal of Freedom. Less well known in the academic community is Mead's coauthorship of a regular column in *Redbook Magazine* from 1962 to 1978. Her popular contributions in the form of short pieces on sex, marriage, gender, race, and more formed an essential part of second-wave feminism (Rapp 2003). And later in life, she was a physically recognized presence in her ubiquitous cape and walking cane (Lutkehaus 2008).

Aside from Mead, other anthropologists dipped their toes in the popular media. Ashley Montagu, who is perhaps most well known for his criticism of race as a biological reality, wrote popular press books, appeared multiple times on *The Tonight Show* with Johnny Carson as well as *What's My Line* and the *$64,000*

Question, and wrote and directed a documentary about nuclear weapons (Sperling 2000). Froelich Rainey, one of the pioneers of combining ethnographic and archaeological evidence in his research, also hosted a weekly Peabody Award-winning TV show called *What In The World?*, which ran for 15 years starting in 1949 (Irving 1992). Other anthropologists have won the National Book Award, been profiled in *Time*, appeared on *60 Minutes*, and been embraced by the Black Panthers (Shankman 2016).

These are all forms of public intellectualism, and yet they have very different methods of delivery and different intended audiences. They also date back several decades. Since these early forays into mass public outreach, anthropology has become less well known and less unified as a discipline, with a diversification of our four fields (Sabloff 1998, 2011). Diversity is now a key tenet of the practice of anthropology in all its forms, but in terms of public intellectualism, the splintering of anthropology has created something of an outreach vacuum (Bird 2010, de Koning 2013; see also #AAAFail as covered in the *New York Times* by Wade 2010, among others). While many of us have written pop-sci type books over the years, we have also unfortunately left openings for allied researchers like Jared Diamond to occupy a space that was once ours.

To position yourself as a public intellectual, then, you first need to define your audience—that is, you need to think about what niche you will reach out to and how you can build an audience for it (Yong 2016). Do you want to talk to the news media, providing quotes about press releases, corrections to news items, or op-eds? You will need to reach journalists or science writers who engage in those media or develop a relationship with an editor or editorial board. Do you want the next generation to learn about anthropology? You will need to offer an after-school club, reach public school teachers who create and give lesson plans, or lobby your local or state educational board to provide teachers with the leeway to incorporate anthropology in the classroom. Are you trying to talk to your interlocutors or their descendent populations, whose history and culture you are studying or writing about? There are likely foreign-language venues like radio stations or newspapers you can tap into. Or perhaps you want to start with a population you are already familiar with: undergraduates. For this audience, you may need to learn how to effectively engage in social media and follow the waxing and waning popularity of Web 2.0 platforms.

Above all, public intellectualism requires a commitment to flexibility in communication and a willingness on the part of all anthropologists to encourage our colleagues to form communities, engage in teamwork, and diversify our membership and our approaches.

Diversity

Science as a whole continues to suffer from a diversity problem. Although the gender balance in science has changed since second-wave feminism started questioning the disparity, there are clearly still issues, especially at the senior level, where far

more men than women hold positions (Ahmed 2016; Blickenstaff 2005; Sah 2016). Science has also been called "embarrassingly white," with a shockingly small amount of national (US) grant funding going to African-Americans, Latinos, and Native Americans as principal investigators but also a low amount of research funding going to investigate problems that affect nonwhite people and communities (Hernandez 2015). The good news is that as anthropologists, we are in a position to combat very white, very (older) male, very cis-gendered science with better outreach. The bad news is that anthropologists who fall outside of this traditional mold might still face obstacles in becoming public intellectuals and engaging in outreach (Clancy 2016; Goldman 2016; Lee 2016; Roca 2016).

Social media is sometimes heralded as the "great equalizer"—with little up-front cost and the ability to reach people around the world, Web 2.0 is theoretically a way for diversity in faculty, students, and research topics to shine through (Humphreys 2016). But academia as a whole is also quite hierarchical, with a publish-or-perish mentality that does not provide much breathing room for nontraditional writing, outreach, or public intellectualism (McClain and Neeley 2014). Even if anthropology students are becoming more diverse as a population, the lack of diversity and inertia in senior positions may stifle the creativity of the younger generation of scholars trying to get their degree and a job in a sluggish market.

Katy Meyers Emery and I found (2015) while surveying bioarchaeology blogging a couple years ago that it was being done exclusively by early-career scholars and mostly by women. Since the number of female students in biological anthropology has soared in recent years (Turner 2002), the predominantly female skew to bioarchaeology blogging makes sense in that context. Studies of gender and career level in science outreach as a whole have found similar statistics, however. Early career scientists are more likely to engage in outreach, with women more likely to do it than men (Andrews et al. 2005; Ecklund et al. 2012). Katy Meyers Emery and I also hypothesized that the lack of bioarchaeology blogging is due primarily to constraints on content (e.g., ethical considerations in displaying human remains) and on time and effort (e.g., why blog when you could write an article?). The cost-benefit issue has been studied in relation to science blogging, with scientists reporting that having limited time constrains their ability to do outreach that may not help advance their careers (McClain and Neeley 2014; Andrews et al. 2005; Rowlands et al. 2011). However, there has been little in the way of comprehensive assessment of social media outreach in science, so more effort is needed in this realm to understand whether researchers who do engage in this form of outreach are indeed succeeding by reaching people they would not otherwise have reached (McClain and Neeley 2014; Griffin and Taylor 2013).

More recently, Sue Sheridan (2017) collected an interesting list of social media sources for bioarchaeology.[3] In terms of blogs, there appear to be a few new ones that are regularly updated, including one by a mid-career female bioarchaeologist (Halcrow 2017). Sheridan's article demonstrates the fragmenting of information

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[3] Stojanowski and Duncan (2015) produced an earlier list of press release outlets but only touched vaguely on blogging and other forms of outreach.

sources in her list of Facebook groups that disseminate bioarchaeology articles. While Katy Meyers Emery and I argued that blogging may be attractive for early-career bioarchaeologists as a way to make a name for themselves, to work through questions, and to create a more level playing field, the recent uptick in the number of (almost all senior) anthropologists with high-profile blogs on news and journal platforms (Sheridan 2017) suggests a growing interest in bioarchaeology outreach at all levels.

Beyond gender and career-stage diversity, though, bioarchaeology needs more diversity in its public intellectuals to better cover the vast range of ancient populations we deal with. An easy way forward here is for senior scholars, particularly those with MA and PhD students, to encourage bioarchaeology outreach in all its forms and, if possible, to lead by example. Would a reporter from *CNN* have contacted me, just barely out of graduate school, for my take on the "gay caveman" if two tenured professors had not mentioned my blog in a favorable light? Quite likely not. Web 2.0 is fractured and fragmentary, which allows for multiple perspectives but also can make it difficult to sort out legitimate voices and sources from post-factual ones. With a little effort from senior scholars—encouraging their students' voices, engaging in useful practices like getting blogs and groups listed on departmental web pages, and replying to journalists by asking them to reach out to younger and more diverse scholars as well—we may see a shift in who is willing to put themselves out there. Having backup is always important.

Community and Teamwork

Building and participating in a community is essential for scholarly public outreach. While this community should be diverse, it also needs to rally around major messages or themes within the discipline. Academics are often conditioned to criticize and peer review others' work and to write largely independently, but outreach is more effective when it is widely supported and when done as part of a team. Think of social media as a virtual conference hallway or poster session—what kinds of conversations do you have when you are face to face with someone whose work you are interested in? If a junior colleague or student walks by, how can you bring them into the conversation as a participant so that they can effectively network?

Answers to these questions can easily be applied to the social media realm by moving or continuing conversations on social media in the form of a Facebook group or a Twitter hashtag, and by encouraging colleagues and students to participate in a way that involves less pressure than introducing themselves to senior scholars at a conference. The community can evolve to include the public as well, such as through a Facebook page, which builds a new audience out of people who would not normally attend a conference but are nevertheless interested in the topic and enjoy hearing from experts. Bioarchaeology is not currently well represented on Instagram or Snapchat, but the changing nature of social platforms means we should be flexible and boost our signal and message across multiple platforms.

Returning to our virtual poster session, what would you say if a member of the press approached you to ask about the significance of your work? We tend to imagine our professional conferences as closed meetings, but they are open to anyone who wants to register, and we should always be prepared for our work to be covered—by the media but also by attendees live-tweeting or otherwise publicizing the content. If you do not want your presentation to be covered by the media or bloggers, place an easily recognizable graphic (such as a crossed-out Twitter icon) on the slides or the poster. But if you are amenable to this type of outreach, this is where teamwork comes in.

The media is not our enemy but rather a member of our team in our attempts to better inform the public about our findings. Sometimes we get bombarded by churnalism, as outlets simply rehash press releases, but most science journalists and science communicators want to produce an interesting, clickable story as quickly as possible and may be employed by outlets such as *LiveScience, Seeker, National Geographic, The Atlantic, Forbes, NPR, The New York Times, Slate,* or *Mental Floss*. Research universities also tend to have a press arm poised to write about new discoveries their faculty and students make. It is important, then, to recognize the differences between press releases and science news items, between blog posts and Storifys, and between legitimate news outlets and tabloids (Killgrove 2016a; Maldonado 2016a). Providing journalists with short summaries, quick responses, and suggestions for additional people to talk to is an easy way to become a member of a media team that you can call on in the future to signal-boost your message.

In order to effectively engage in bioarchaeological science communication, or to effectively support it, first we need to recognize the value of public intellectualism, and second we should encourage diversity, community, and teamwork in its accomplishment. The following section offers practical examples for how to craft an effective message and how to support scholars who are doing this outreach.

Writing Anthropology for the Public

If you have read this far, you are clearly interested in communicating anthropology to a larger audience than just your colleagues and students. But what are you doing to get the word out there? Do you live-tweet conference talks? Post summaries of conference sessions or public talks on your personal/professional blog? Did you make your last presentation accessible via post-event video, or your last conference viewable via livestreaming, or your colloquium approachable by a science journalist? Have you contributed syntheses of new research to a collaborative outlet like a Facebook group or email listserv? Are you interested in writing a blog, an op-ed, a petition, a crowdfunded campaign, a press release, or other public-facing piece and are not sure where to start? Or are you following people who do these things?

I start with these questions to demonstrate that there is a range of engagement being done by professionals in the field, from microblogging on the social media platform Twitter to international news pieces by writers like me (Rocks-Macqueen

and Webster 2014). You do not need to confine yourself to one outreach method and rather should figure out what works for you – your strengths as a scholar, your work/ life balance, and your stage in your career. If you do have a message you want to get out, this section gives some practical advice about how you can more effectively do it.

Developing a Message

While I cannot tell you which of the huge variety of outreach methods listed above is right for you (see Clack and Brittain 2007 for more ideas), I can tell you that developing your message is pretty much the same for all of them. It all comes down to front-loading your information. This may seem counterintuitive, especially for the more humanistically focused anthropologists who are used to carefully building an argument, but putting your takeaway message front and center obviates the "tl;dr" tag you are likely to get if you bury the lede.

Have you ever seen a blockbuster movie trailer, especially one with the "In a world where…" convention? That is actually a great way to workshop your message. To take an example, here is the title from one of my recent peer-reviewed articles (Killgrove and Montgomery 2016): "All roads lead to Rome: Exploring human migration to the Eternal City through biochemistry of skeletons from two Imperial-era cemeteries (1st–3rd c AD)." Fellow bioarchaeologists might be intrigued by this, but for the public: snoozefest! But in a world where slaves were flooding into Rome, one bioarchaeologist is studying diseases on skeletons to solve the mystery of their lives and deaths! This is more interesting and thought-provoking to a broader audience than saying that I collated paleopathological and paleodietary data with isotope results on migration to investigate acculturation. The hypothetical movie trailer is not untrue; rather, it is encapsulated in common, attention-getting terms and not discipline-specific jargon.

Obviously, you should not directly use your "In a world where…" mental exercise in your outreach. But this is a quick and easy way to get into the mindset of people who want to learn about the latest findings in bioarchaeology—because everyone likes skeletons—and to meet them where they are. In order to do that, you should consider where your research question fits into a broader question, the field at large, or contemporary trends in our society. This will further produce benefits the next time you need to address the NSF's broader impacts statement or answer the infamous Question 5 on the Wenner-Gren grant application. If you can situate your published research or your proposed research in a larger context, you can make it relevant to the general public.

Once you narrow down an audience, delivery platform, and style and after you have honed your message, you should ensure that message gets communicated through your own outreach or through your teamwork with members of the media and press agents. Having a message and staying on message is important for avoiding a telephone game-like propagation of misinformation.

It is also key to ensure that collaborators are on the same page. Too often, collaborators put out competing press releases about a particular project or article. This is difficult for members of the media, who need to choose whether to use the first press release put out, the press release from the first author's institution, the press release from the highest-ranked institution, the one with the most pictures and quotes, etc. Competing press releases also tend to disadvantage those of us who do not work at research universities with good PR or marketing departments. If you are a member of a research team, you should ensure that contributors—especially early-career, female, and diverse members—get credited appropriately in press releases, blog posts, and other communications and that all outreach and press about the project carries the same message. Getting your message out is much easier if you show a united front.

DIY Outreach

Once you have decided on a message and have ensured your collaborators are on the same page, how do you get it out? There are two main ways—you can do it yourself, such as through a blog, or you can enlist the help of people in public relations or science journalism.

The do-it-yourself approach through blogging is the easiest, as there is no up-front cost; it is flexible in terms of length, purpose, and time; and it is reasonably close to traditional peer-reviewed writing formats in anthropology (Cassimally 2016). The difference is that the audience is theoretically everyone interested in the topic, and not just those who can access and interpret your article. You might have your own blog, you might be able to post to your university's or college's website, or you may contribute to a collaborative blog. Currently, there are no collaborative bioarchaeology blogs, but it would be trivial for an organization, a journal, or even a graduate collective to start one.

These are some general tips for writing a summary or précis of a published article, ongoing research, or conference presentation:

1. The piece should be about 700–800 words or shorter if possible. This is a good length for what people are willing to read while perusing their social media feed. The majority of my news items at *Forbes* are in the 800-word range. Very few outlets have long-form articles these days (e.g., *The New Yorker*), and online magazines that publish those pieces tend to be staffed by journalists and have a target audience of college-educated professionals (Pew Research 2012).
2. Front-load the information by putting the most relevant parts in the title and then reiterating that information in the first sentence or two. Then create a bit of mystery at the end of the first paragraph that encourages someone to read on. We can take as an example my 19 October 2016 *Forbes* post titled: "Skeleton of Medieval Giantess Unearthed from Polish Cemetery." The first paragraph reads: "Just outside of the Medieval church of the Ostrów Lednicki stronghold in Poland,

archaeologists from the Museum of the First Piast at Lednica have unearthed the strange burial of a giantess. The woman's skeleton showed that she reached a towering height of 7'2" but also that her short life was full of traumatic injuries and disease" (Killgrove 2016b). If a reader clicks through based on the title or accompanying skull photo, they will likely read at least the first paragraph, which provides information about the skeleton in question but also encourages them to read on—or at least to skim it.

3. Make sure to use evocative and approachable language, the way you would explain something to one of your students who is still learning and who does not have the shared context of disciplinary jargon. For example, rather than saying that a past population "fomented sociopolitical restructuring," you can say that they "contributed to political upheaval." Rather than discussing "widespread periostitis bilaterally on the tibiae and fibulae," you can talk about "an extra, thin layer of bone on the lower legs." Changing the language that you use should not be "dumbing it down"—rather, in sociolinguistic parlance, you are using a different register to effectively reach a particular audience. Writing in a different register can be challenging for the uninitiated, but there are quick ways to check this, such as by using Microsoft Word's "readability statistics." These will calculate automatically the Flesch Reading Ease score and the Flesch-Kincaid Grade Level score, both of which are useful if your goal is to write for a general public (Flesch 1979). A plurality (44%) of American adults read at an intermediate level, with another 43% reading at a basic or below basic level, which means that the average US adult is reading at about an eighth grade reading level (Kutner et al. 2005). Readability statistics can therefore help you structure your writing to employ shorter sentences and more commonly understood words.

4. Include pictures, as people are more likely to click on a link shared on social media if it has a photo of a skull, skeleton, or grave associated with it (Rogers 2014; Mellow 2016). This instruction can, obviously, present an ethical or even legal problem, depending on the population you work with (Meyers Emery and Killgrove 2015; Stemwedel 2016). NAGPRA guidelines or your employer's rules may not allow you to publish images at all or except within the boundaries of a research publication. If it is possible to include a photo in a press release, blog post, or other media coverage, choose one that includes a skull, a recognizable pathology, or a skeleton in situ. If it is not possible to share a photo, there are ways around this. Using a photo that has been altered to blur or black out bones may be effective (see Killgrove 2015a), or using an out-of-copyright or public domain image that relates to the story can also work (see Killgrove 2015b).

5. Finally, but perhaps most importantly, make sure your write-up checks off most of Freeman Tilden's (1957) wonderful principles of heritage interpretation. Adapting those to the purposes of bioarchaeology outreach, your story needs to be:

   (a) Relatable—Why should people read it? We tend to think of our subject as being of interest to everyone, but that is not always the case. Can you relate

the major theme or message of your piece to something in contemporary society? Relatability is one of the reasons the "gay caveman" went viral, as it tapped into a wave of culture change.

(b) Provocative—Does it make people think or wonder? On a small scale, your first sentence or second should provoke readers into reading further. But on a larger scale, when the reader is finished, will they think or wonder about the applicability of this research to other questions? The popularity of two of my *Forbes* pieces on the skeletons of *castrati* (Killgrove 2015b; Killgrove 2016c) and associated comments suggest that these findings might lead people to think about transgender individuals in contemporary society, making a link that was only implied in my pieces.

(c) Holistic—The piece should stand on its own, by including enough context for the reader to understand it. While most readers will be at least vaguely familiar with the time, place, and even culture evoked by the "Roman Empire," you cannot a priori assume a familiarity with the past. Clear dates, a geographical landmark or two, and brief information about culture are necessary in the first few sentences or paragraphs to set the scene as quickly as possible. This terse example of the "Five Ws"—who, what, when, where, and why—comes from a 28 June 2016 post of mine: "The skeleton of Gaspare Pacchierotti, a famous 19th century male mezzo-soprano, was exhumed so that researchers could study the effects that castration had on his body. But their analysis found that the physical act of being a professional opera singer also resulted in changes to Pacchierotti's skeleton." Setting the scene for the remainder of the article is important for reader comprehension, which in turn leads to wider sharing of the piece.

(d) Appropriately Focused—Whatever you create for your outreach should use language and style relevant to your chosen audience. As noted above, the average US adult reads at an 8th grade level. Most science journalism, though, is aimed at the high school graduate level, and some outlets, especially the ones that publish long-form journalism, are aiming at college-educated adults (Pew Research 2012). Playing around with different registers and different audiences is important, and the style you hone for a blog post will not be the same as the style needed to write a grade school lesson plan. Flexibility, again, is the key to successfully focusing your outreach on a particular audience.

Enlist Help

If the previous section put you off because you do not love writing or because you find this type of outreach difficult, there is another solution: enlisting help from science communicators like journalists and bloggers and from public intellectuals who can share and tweet your work.

The first task that needs to be accomplished is getting to know people in the scicomm community. This means identifying and reading blogs, following people on Twitter, or looking at the bylines on news articles that you like. For example, did you read the latest piece by Stephanie Pappas at *LiveScience*, or Rossella Lorenzi at *Seeker*, or me at *Forbes*? Reach out! Emailing or pinging someone on Twitter to see if they are interested in covering your work is perfectly normal, and journalists expect this communication. Members of the media no longer have rolodexes; we have blogrolls and Twitter followers, Google scholar searches, and referrals from others.

There is a catch here, though: enlisting help from the media usually means reciprocating and establishing yourself as part of the team. When journalists or other science communicators email you asking for an opinion on an article they are working on, you should give an opinion or, if it is way outside your field, suggest someone else who can. Journalists look for these comments on breaking or trending news to ensure they are not covering something absurd or to ensure they are covering it appropriately. If you do not want your research or a colleague's turning into the "gay caveman," providing a short comment by email or having a 5-min phone conversation with a journalist will go a long way toward preventing that. It is also key to return this email or phone call as quickly as possible—within hours, not days and certainly not weeks.

We tend to feel as academics that we can put off intellectual activity and that we can wait until we are ready to engage. This is impossible with the media—journalists are writing several pieces at a time, and they are under intense deadlines, often having to put out three or four pieces per day. Granted, university faculty are also under intense deadlines, and it may be more difficult for scholars with a high teaching load to respond as quickly to the media as scholars with a low load. If only professors at R1s talk to the media, though, we miss out on the diversity of opinions of faculty at other institutions and organizations. Try to point journalists at a diverse array of colleagues (including graduate students, who are also professionals in the field) if they need additional commentary, rather than just the world expert or a friend in your department.

The crazy schedule of modern journalism, though, also means that journalists are always looking for new stories—articles, conference papers, archaeological discoveries, and case studies are all easy to make a short news item out of. When speaking with a science communicator who is going to write about your work, give them as much information as possible, but do not overwhelm them with a zip file of your last ten articles. Front-load the Five Ws in a couple sentences or in a press-release-style summary. When asked to comment, contribute short pull quotes and bullet points with your clear message. Unless they have asked for a lengthy response, keep yours to two to three short sentences per question, and answer those with an eye toward your audience's comprehension level.

Finally, be sure that the science communicator understands any embargo on your work, and communicate this date to them and to any collaborators. Many journals will embargo articles so that journalists can formulate a news item before the official release. Some universities embargo press releases for the same reason. Good

journalists at reputable outlets will not break embargo, as they can potentially lose access to future information. It is important to ensure that all collaborators on a project understand the embargo and also that they are informed about any embargoed press releases that another member of the team may be putting out.

Getting the word out about your latest research paper is increasingly easy today. Not only can a scholar put out their own summary on a blog or other site, but they can more easily enlist help by identifying and contacting reputable science communicators thanks to the Internet. Once a piece of research becomes news, it is also possible to tap into a community interested in that topic to encourage shares, retweets, and other propagation of the message.

Support Others

The previous section provided guidance for people who want to do scholarly public outreach themselves, but everyone can contribute to furthering a message of the importance of bioarchaeology. We can do this by supporting others who are putting themselves out there, rather than by looking askance at the way some scholars choose to direct their intellectual activities.

The first step is changing the way we view the media. As mentioned in Sect. "Community and Teamwork", the media is part of our team. Some bioarchaeology "news" is truly, horrifically, shockingly bad (see Killgrove 2016a; Maldonado 2016b; Rocks-Macqueen 2014). Nothing that we do is going to stop tabloid coverage of bioarchaeology. By and large, though, science journalists and bloggers want to help; they are committed to communicating true, verifiable science. Writers at *LiveScience*, *Seeker*, *Forbes*, *Nature News*, and *National Geographic* among others are our collaborators, not our critics. They are not writing gotcha journalism—they are looking to speak to experts who can provide an understandable explanation and perhaps a soundbite or two. They want our message, so treat them as you would a colleague in a university press office.

Second, we need to change the way that we advise students. Web 2.0 and social media are not going away, and yet many students are told that these platforms are rife with error rather than a powerful way that diverse voices can communicate a relevant message (Roblyer et al. 2010). Encourage your students to blog (Goldman 2016). Encourage them to tweet about news items and to use hashtags for your course. Encourage them to join a professional organization and tweet at the conference (Saunders and Janiszewski 2016). Encourage them to take a course in twenty-first-century professionalism, media relations, presenting anthropology (Killgrove 2014), social media, or scholarly public writing. Chances are, your university or one of the professional organizations has a short or online course in one of these topics already.

And third, supporting others means changing your hiring requirements and your tenure and promotion guidelines (Waterston et al. 2017). What counts for tenure at your institution? Peer-reviewed articles tend to be the currency in anthropology.

Increasingly, though, movements in digital humanities and open access science have produced a groundswell of support for a vast variety of intellectual products: publication of data sets and working papers, regular upkeep of a scholarly blog or other social media outlet, and the development of maps, data visualizations, videos, and curricula (Andersen 2004; Borgman 2007; Gbur 2016; Purdy and Walker 2010). While traditional publications are collated by Google Scholar and researchers are presented with their h-indexes, quantifying other forms of intellectual output—particularly public intellectual output—is much more difficult and decentralized (Sabloff 2011; Shipman 2016). Do you list the number of times the media has approached you as an expert on your T&P documentation? Do you mention your most popular tweet in your job application cover letter? Do you include your blog readership numbers in your CV? These are questions without easy answers but that highlight the changing nature of research relevance. Here are two examples from my own work to illustrate the debates I have with myself while thinking about how I discussed my scholarly/public intellectual outreach for my tenure packet submission.

1. In 2010, I was a coauthor on an article about lead exposure and geographic origins in Roman England (Montgomery et al. 2010). It has been cited 46 times, which is pretty decent for an isotope paper in an edited volume. In early 2012, I riffed on the article, pulling out the data on lead poisoning and writing a post on my personal blog. As lead poisoning in Rome is a hot topic in a variety of fields, my post has been viewed more than 72,000 times. Does the number of citations—and by extension my h-index – matter more than teaching tens of thousands of people something new about ancient Rome? In this case, the peer-reviewed article "counts" far more than the blog post, even though my authorship contribution to the article was small and even though the blog post has a better reach.

2. Since I began writing for *Forbes* in May of 2015, and *Mental Floss* in February of 2016, I have written more than 220 posts total. At an average of 800 words each, that comes to 176,000 words—about the same length as 20 peer-reviewed articles or 2 full nonfiction books. My readership includes more than 3.7 million people and more than 5.5 million page views all told. This is not to say that these pieces, which are mostly short summaries, should count the exact same as peer-reviewed articles. At the same time, though, this type of public intellectualism is by and large viewed as service at most universities, not as scholarly output. Is that fair? If you do not think so, working to change your hiring or T&P practices is an easy step to take. The most recent change in the UWF Anthropology department's guidelines now allows blogging to count as scholarly output—a year of regular blogging counts as the equivalent of one peer-reviewed article—or it can count as service in the form of public outreach. While this is not an ideal compromise, it is a good start.

Changing the way we view our relationship with the media, the way we teach students, and the way we assess a scholar's intellectual output is necessary to move not only public outreach in bioarchaeology but science as a whole forward in the twenty-first century. More scholars across the board are engaging in nontraditional

communication methods (Harley et al. 2010); finding ways to reward this rather than punish it is one of the major tasks facing us in academia today. With the recent publication of the AAA's "Guidelines for Tenure and Promotion Review: Communicating Public Scholarship in Anthropology" (Waterston et al. 2017), there is hope that tenure and promotion committees across academia will find ways to include this important public aspect of anthropology in their merit criteria.

Conclusions: Using Scicomm to Combat the Post-Truth Landscape

In the end, we are not going to fix everything that is wrong about the bioarchaeology scicomm landscape or even the structure of our university systems. But we can all contribute to the furthering of a message of bioarchaeology through work in the realm of scholarly public outreach and science communication.

We do this by becoming public intellectuals ourselves, by creating a diverse and supportive community of scholars, by collaborating with the media, by discussing our work with the general public, and by rewarding nontraditional methods of scholarly writing and outreach.

More specifically, we do this by:

1. Putting ourselves and our expertise on our university website or other clearing-house of experts, so that journalists can more easily find us and gauge our availability and utility. Is there a list of bioarchaeologists willing to talk to the media? If not, why not? Who should start one? Should it be hosted by the American Association of Physical Anthropologists, the Society for American Archaeology, or the Paleopathology Association?
2. Contributing our thoughts and messages to a blog, podcast, video, infographic, meme, Instagram feed, Twitter feed, etc. Which platform works for you? How can you integrate some Web 2.0 into your research or into your dealings with students?
3. Trying new things. We should not be afraid to talk to the media. Say yes to requests to come on a podcast. Approach a local school to see if they need speakers for History Day, Archaeology Day, Career Day, or similar celebration. You do not have to say yes to every request made on your time. If you say no, be sure to think of someone else who might want that experience, and particularly try to encourage the voice of someone less well represented in the field.
4. Taking a workshop in public relations or media at your university or signing up for one through your professional organization. For example, Lynne Goldstein presented an SAA webinar on archaeology and social media in 2014, and in 2016 I co-taught an online course in how scientists can use Twitter effectively. Seek these opportunities out, since they will help you become a participant-observer of the scicomm ecosystem. And if you cannot find one, figure out how to make one—get funding from your dean to bring in a speaker, or collaborate with your English or Rhetoric department to develop a workshop on public writing.

5. Teaching students to engage with the media and the public and changing your professional guidelines to help younger colleagues navigate a still-hostile system that privileges science creation and denigrates science communication.

6. And finally, finding or creating ways to reward outreach. University departments can cover blog hosting fees. Conferences can create a travel award for blogging or tweeting students. Professional organizations can institute outreach prizes and awards, such as the AAA-GAD New Directions Award or the SAA Award for Excellence in Public Education—Media and Information Technology. Nominate colleagues for these—especially younger colleagues, female colleagues, and colleagues of color—to showcase the diversity of approaches in science communication and, most importantly, to demonstrate and signify that these approaches are worthwhile methods of doing anthropology.

Science communication is a collaborative effort. Simply generating bioarchaeological data without crafting a message of importance and relevance leaves your work at the mercy of marketing departments and journal press offices that might garble that message. One only needs to look at Phys.org and ScienceDirect, the two major press release outlets in bioarchaeology, to see the game of telephone at work. Poor media outlets will engage in churnalism, passing off the press release as news, but good science communicators will read the article, talk to experts, and write a relevant and provocative short-form news item. These are the people you should be collaborating with or the people you should be aspiring to become.

Anthropology has, since its development, always been a publicly engaged discipline. But the recent restructuring of higher education and the concomitant changes to hiring and tenure practices have caused us to lose sight of the importance of entering the public sphere to communicate ideas and to lose sight of the need to develop and teach skills that are increasingly useful in the twenty-first-century workplace. Through use of the techniques and information presented in this chapter, though, we can all work together to make bioarchaeology more visible to a variety of public audiences.

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