



# Examining Gender Disparities in Computational Archaeology Publications: A Case Study in the Journal of Computational Applications in Archaeology and the Computer Applications and Quantitative Methods in Archaeology Conference Proceedings

CASE STUDY

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## ABSTRACT

Since the 1970s, archaeologists have begun acknowledging the gender disparities that have long existed within the field of archaeology. This has become especially evident within academic publishing over the past decade as archaeologists have started digging deeper into publishing trends within the field. Following this trend, the present research examines gendered differences in the subfield of Computational Archaeology through the analysis of data from publications in the Journal of Computer Applications in Archaeology (JCAA) and the Computer Applications and Quantitative Methods in Archaeology (CAA) conference proceedings, both of which focus on digital and computational archaeological methods. The results of this study demonstrate that women represent only 25 percent of first authors for the JCAA and 40 percent of first authors for the CAA proceedings. Given these discrepancies, more research is needed to understand why these discrepancies exist and whether parallel differences are present within other publishing outlets, in funding for computational archaeology projects, and within academic hiring.

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## 1. INTRODUCTION

Archaeologists, especially those working in academia, have long acknowledged that publishing in peer-reviewed venues represents a scholar's working capital, or measure of research productivity and success. In recent years, increased attention has been raised toward who is publishing and/or producing knowledge in archaeology (Bardolph 2014; Fulkerson and Tushingham 2019; Heath-Stout 2020, 2019; Rautman 2011; Tushingham et al. 2017), who is being funded to complete archaeological research (Goldstein et al. 2018), and who has been successful in obtaining academic jobs in archaeology (Harris and McKinnon 2016; Speakman et al. 2018a<sup>1</sup>; Speakman et al. 2018b). These studies have highlighted significant gender differences within each of these realms. In Computer Science, significant gaps in gendered representation have been examined (Beyer 2014; Convertino 2020; Master et al. 2016; Penner 2015; Reisman 1990; Sax et al. 2017; Vitores and Gil-Juárez 2016). The present study meets at the intersection of research into gender disparities in both archaeology and computer science research by examining gendered differences in computational archaeological research through a case study on the *Journal of Computer Applications in Archaeology* (JCAA) and the *Computer Applications and Quantitative Methods in Archaeology* (CAA) Conference proceedings.

Literature on gendered differences in Computer Science demonstrates that the gap between male and female computer scientists has increased significantly since the 1980s. According to Sax et al. (2017:260), the percentage of bachelor's degrees in Computer Science awarded to women was 37.1 percent in 1984, while that number had dropped by more than 50 percent by 2017 (18 percent). Further, this decline has occurred despite the significant growth in recruiting efforts meant to increase the gender diversity in Computer Science (Vitores and Gil-Juárez 2016).

As a relatively recent graduate myself, this paper is a result of my time on the job market hoping to secure a position in computational archaeology. To start my search, I began researching different academic departments in the United States (US) to see 1) which departments already have computational archaeologists; 2) what kind of laboratory spaces are standard for those positions; 3) what kind of funding these scholars had successfully received; and 4) what kind of experience those scholars had when they secured their positions. During the course of this search, however, I began to notice that those scholars who explicitly called themselves *computational archaeologists* were almost entirely men. This led me to ask the overarching question that guides this research: who is doing the majority of computational archaeology and why?

## 2. RESEARCH QUESTIONS

To begin addressing the question of who is doing computational archaeology, I ask the following question: Who publishes computational research in archaeology? In doing so, I seek to identify any significant gender imbalances within the subfield of computational archaeology and to promote pathways towards increasing the gender diversity of this growing field.

## 3. WHAT IS COMPUTATIONAL ARCHAEOLOGY?

Before we can address the *who* of computational archaeology, we must first identify *what* computational archaeologists actually do. As noted by Huggett (2014), computational archaeology goes by many other names, including archaeoinformatics, digital archaeology, and archaeological information science, and though archaeologists have been doing computational archaeology for many decades, the field has not been well-defined. I suggest using Isaac Ullah's 2018 definition of computational archaeology (found on his website at <http://isaacullah.github.io/What-is-Computational-Archaeology/>) as archaeological analyses that involve "actual computation." This definition is broad enough to remain inclusive of most computer applications in archaeological research but also differs from *digital archaeology* in that it requires that data computation (such as data analysis, pattern recognition, predictive modeling, and/or simulation) is a central component of the research being conducted. Digital archaeology, on the other hand, focuses more on data visualization and/or manipulation and is not included within the present study.

## 4. METHODS

In the present study, I examined the peer-reviewed articles published by the JCAA and the conferencing proceedings published by the CAA. Since its inception in 2018, the JCAA has published four volumes (one each year) with between seven and twenty articles in each volume. For comparison, I also reviewed the conferencing proceedings from 2013 through 2017 (the five most recent years publicly available). Both of these publications focus on computational and digital archaeological methods and applications. As such, focusing on these publications will illuminate gendered differences in computational archaeology through a more nuanced view of those scholars who are intentionally targeting a computationally-focused audience.

Because this research focuses specifically on computational archaeology, I have omitted the

publications from both the CAA proceedings and the JCAA that focus primarily on digital archaeology, including those that focus solely or primarily on data collection, database management, digitization of archaeological records, 3D modeling/photogrammetry, and pedagogical methods. I also want to emphasize that as a relatively new publication, the JCAA has not published a large enough dataset of manuscripts to be statistically significant. Still, the generalizations made from those publications are immensely important for understanding trends in publishing within computational archaeology.

In an attempt to identify both who is leading and who is involved in each of these publications, I examine the following: 1) first authors for each publication; 2) the total number of men and women listed as authors; 3) the frequency of single authors for men and women; and 4) the ratio of men to women as co-authors for each publication. To differentiate between genders, I examined the research profiles of each first author that I did not know personally to identify pronouns (she, he, or they). If research profiles could not be located and/or no pronouns were used, I relied on photographs of those scholars, and I acknowledge that this method may have introduced some bias. In the text, I interchange the terms “male” with “men” and “female” with “women” (see [Tushingham et al. 2017](#)).

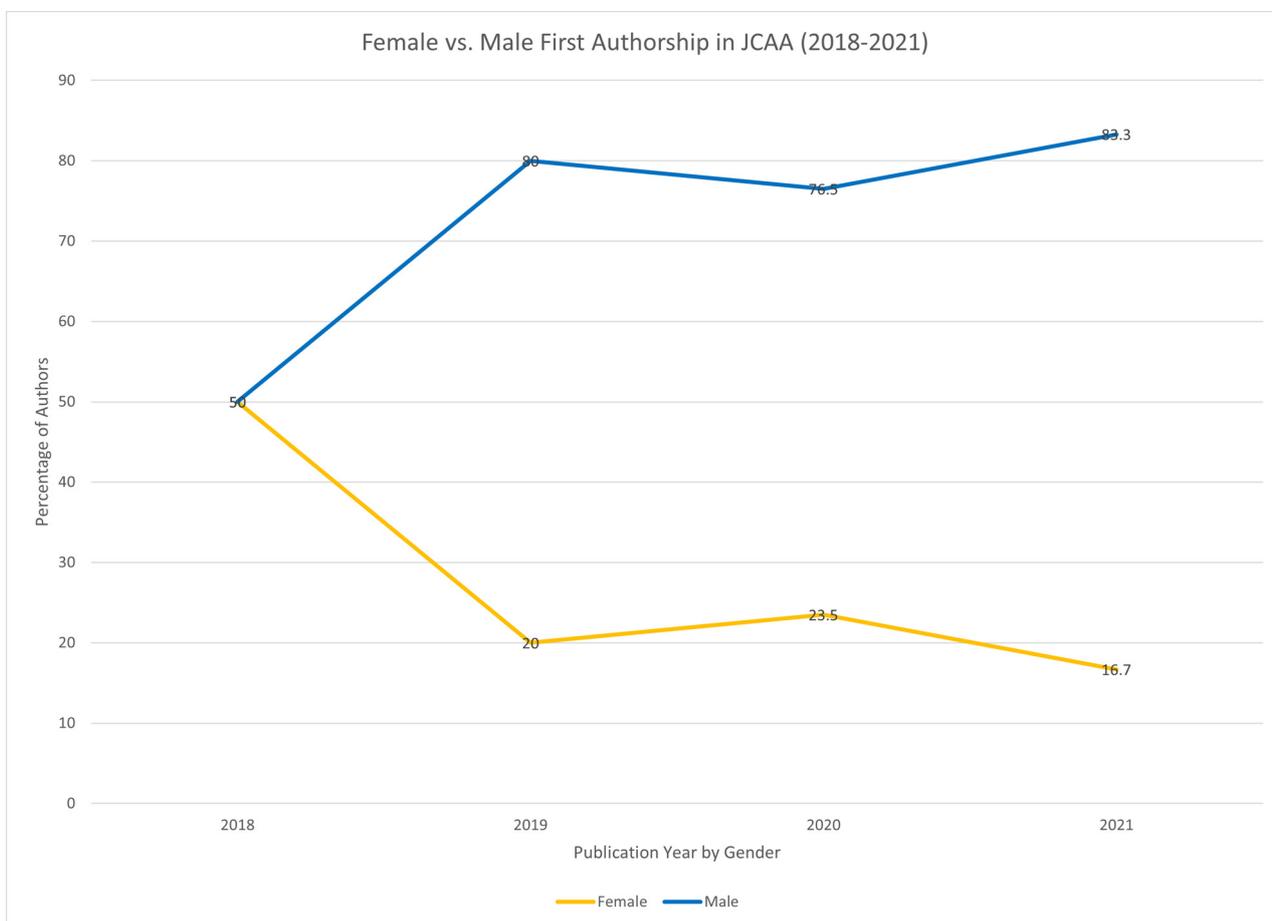
## 5. RESULTS

The data from publications produced only male and/or female results. Again, I recognize that this may not be a completely accurate reflection of the genders of each of these individuals and that this may slightly skew the results below.

### 5.1. JCAA PEER-REVIEWED ARTICLES

In the JCAA, 43 articles were published over the first four issues (2018–2021) that focused specifically on computational archaeology. Of these, 10 publications were first-authored by women, comprising 23.26 percent of the publication corpus. Further, the ratio of female first-authorship has not increased over time, but instead has decreased from 50 percent in the 2018 volume to only 16.67 percent in the most recent (2021) volume ([Figure 1](#)).

In addition to first authors, I also compared the overall totals of male and female authors, including all co-authors. In total, 146 authors were included in the computational archaeology publications between 2018 and 2021. Of these, only 32.2 percent (n = 47) are women. Further, women represent only 2.3 percent (n = 1) of the single-authored publications, whereas 9.3 percent (n = 4) of the JCAA publications are authored solely by



**Figure 1** Comparisons of Female and Male First Authors in the JCAA (2018–2021).

women. On the other hand, 25.6 percent (n = 11) of the publications have men as the single author, and 18.6 percent (n = 8) of the publications are authored only by men. An additional 25.6 percent (n = 11) of publications have at least two more male authors than women, while only 4.65 percent (n = 2) have at least two more women than men as authors. The remaining publications (n = 6) have equal ratios of men and women authors.

I also examined the methods applied within each of these publications and divided the papers from the JCAA into six groups based on the primary methods applied, including geospatial analysis, machine/deep learning, modeling/simulation, quantitative analysis, network analysis, and gaming (Table 1). Of these, geospatial analysis tops the list, with 44.2 percent (n = 19) of the JCAA publications analyzed. Within this group, female first authors represent 36.8 percent of the papers (n = 7). Following geospatial analysis, the highest ratio of female first authors is within the quantitative analysis category, representing 25 percent (n = 1) of the publications within that category. Machine/deep learning publications are second most popular with nine total publications, followed closely by modeling/simulation (n = 8). Female first authors comprise only one publication within of each of these topics.

I break these categories down further by looking at gendered authorship more broadly. Within geospatial analysis (n = 19), 31.6 percent (n = 6) of publications have at least two more male authors than female authors, while only 10.5 percent (n = 2) have at least two more female authors than men. Further, an additional 26.3 percent (n = 5) of publications are either single-authored by men (n = 3, 15.8 percent) or have only male co-authors (n = 2, 10.5 percent).

Within the machine/deep learning group (n = 9), 55.5 percent of publications have at least two or more men as authors (n = 2, 22.2 percent) or only have male co-

authors (n = 3, 33.3 percent). Women authors comprise only one of these publications (1.11 percent). Similarly, women authors represent only one of the publications within the modeling/simulation and quantitative analysis groups, respectively.

In order to rule out gendered disparities within acceptance rates for JCAA, I have also included rates of rejection. Between 2018–2021, 67 articles were submitted, and only 11 (16.42 percent) were rejected. Of the 37 authors included in these 11 rejections, 22 (59.46 percent) are men, and 15 (40.54 percent) are women authors.

### 5.2. CAA CONFERENCE PROCEEDINGS

The analysis of the 2013–2017 CAA conference proceedings resulted in much more equitable publishing between men and women first authors. Of the 162 articles analyzed, women authors comprise 40.1 percent (n = 65) of first authors across all five years, while men comprise the majority at 58.9 percent (n = 97). This ratio remains fairly constant over the five issues analyzed, while 2015 has the greatest equity among first authors with 46.7 percent women and 53.3 percent men listed Figure 2.

Similar to the JCAA articles, only 34.3 percent (n = 159) of all listed authors are women. Unlike the JCAA articles, however, women represent a slightly higher ratio of single authors at 13.84 percent (n = 22) of the single-authored papers, whereas male single authors represent 13.2 percent (n = 21) of the publications. A mere 2.5 percent (n = 4) of publications are co-authored solely by women, compared to publications with only male co-authors at 26.42 percent (n = 42). The remaining publications (n = 6) have equal ratios of men and women authors. Further, publications with at least two more women authors than men represent 12.58 percent (n = 20), while publications with at least two more men than women comprise a slightly higher ratio of 15.72 percent

	2018		2019		2020		2021		TOTALS	FEMALE %	MALE %
	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE			
<b>Geospatial Analysis</b>	2	1	1	2	3	6	1	3	<b>19</b>	0.368421053	0.631578947
<b>Machine/Deep Learning</b>		1		2		2	1	3	<b>9</b>	0.111111111	0.888888889
<b>Modeling/Simulation</b>			1	1		3		3	<b>8</b>	0.125	0.875
<b>Quantitative Analysis</b>				1	1	2			<b>4</b>	0.25	0.75
<b>Gaming</b>				2					<b>2</b>	0	1
<b>Network Analysis</b>								1	<b>1</b>	0	1
<b>Totals</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>4</b>	<b>13</b>	<b>2</b>	<b>10</b>	<b>43</b>	<b>23.26</b>	<b>76.74</b>

Table 1 Primary Methods used in JCAA Publications (2018–2021) by Gender of First Author.

(n = 25). The remaining 15.72 percent of publications have equal ratios of men to women (n = 25).

As with the JCAA articles, I divided the CAA proceedings into seven groups (Table 2), including all six groups from the JCAA articles with the addition of natural language processing. Similar to the JCAA articles, geospatial analysis topped the list with 56.6 percent (n = 90) of the

publications, followed closely by modeling/simulation (n = 40), comprising 24.7 percent of the publications. Of these, female authors comprise 38.9 percent of the publications focused on geospatial analysis and 40 percent of the modeling/simulation publications. Of all the categories present, female first-authors are most represented within quantitative analysis, the only

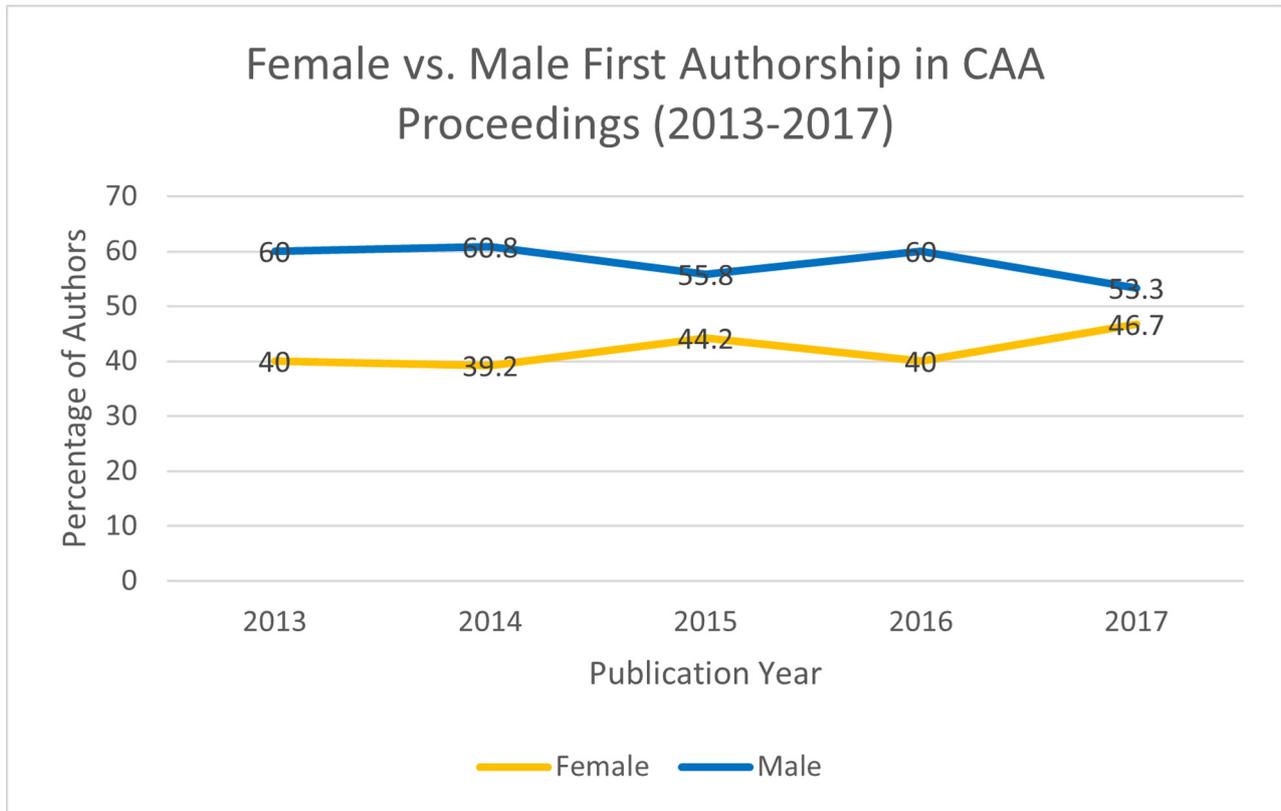


Figure 2 Comparisons of Female and Male First Authors in CAA proceedings (2013–2017).

	2013		2014		2015		2016		2017		TOTALS	FEMALE %	MALE %
	FEMALE	MALE											
<b>Geospatial Analysis</b>	5	12	7	16	16	18	3	5	4	4	90	0.388888889	0.611111111
<b>Machine/Deep Learning</b>					1	2		2			5	0.2	0.8
<b>Modeling/Simulation</b>	5	5	4	5	3	4	2	4	2	6	40	0.4	0.6
<b>Quantitative Analysis</b>	2	1	3	3	6	5	1				21	0.571428571	0.428571429
<b>Gaming</b>		1								1	2	0	1
<b>Natural Language Processing</b>						1		1				0	1
<b>Network Analysis</b>		1							1		2	0.5	0.5
<b>Totals</b>	12	20	14	24	26	30	6	12	7	11	162	0.401234568	0.598765432

Table 2 Primary Methods used in CAA proceedings (2013–2017) by Gender.

category where women represent the majority of first authors at 57.1 percent.

Of the 90 geospatial analysis articles, 36.7 percent are authored only by males (n = 11) or by an all-male team of co-authors (n = 22), whereas 20 percent of the articles are authored solely by women (n = 16) or by all-female teams (n = 2). Contrary to the JCAA articles, women are slightly more likely to be single authors in this group than are men.

Modeling/simulation articles are comprised of twice as many men as single authors (n = 6) than women (n = 3), and co-author teams comprised only of men are far more dominant (n = 9, 22.5 percent) than teams of women (n = 1, 2.5 percent). Further, articles with at least two more men authors than women represent 25 percent (n = 10) of the articles in this group, while articles with two or more women than men comprise half that (n = 5, 12.5 percent).

Quantitative analysis had the most female first authors (57.1 percent), and the distributions of co-authors are relatively even between men and women. An equal ratio of men and women are represented as single authors (n = 2), but articles with at least two or more women authors than men comprise 28.6 percent (n = 6) of the group, while articles with at least two or more men than women represent only 4.8 percent. Teams of all men authors outweigh teams of all women authors, with 28.6 percent (n = 6) versus 4.8 percent (n = 1).

### 5.3. EDITORIAL BOARDS

After examining these results, I questioned whether the gender ratios of the editorial teams for these two

publications reflected similar ratios as the publications. Between 2018 and 2021, the editors-in-chief of the JCAA were Arianna Traviglia and Philip Verhagen, and between 2017–2020, the editorial board consisted of 16 members, five of whom were women, comprising 36.25 percent of the board (personal communication, Philip Verhagen, 2022). Similarly, the current board (2021–2023) consists of 15 members, only four of whom are women, comprising only 26.7 percent of the board. If we include the two editors-in-chief (including one woman and one man), women comprise 29.4 percent of the entire editorial board. This is comparable to the ratios of women first authors in the JCAA (25 percent) (Figure 3).

I performed the same analysis for the CAA proceedings by looking at the editors for each yearly proceeding. A total of 15 editors are listed between 2013 and 2017, and seven of these, or 46.7 percent, are women. As with the JCAA articles, this ratio is slightly higher than the ratio of female first authors within the proceedings during that period (40.1) but remains comparable.

## 6. DISCUSSION

This study has demonstrated that the subfield of Computational Archaeology is significantly underrepresented in terms of women authorship, though the overall results suggest that these disparities are on par with those seen in other archaeological publications (Heath-Stout 2020). Interestingly, however, women are less likely to publish as first-authors in the JCAA than in the CAA proceedings, and the ratio of female first authors in the

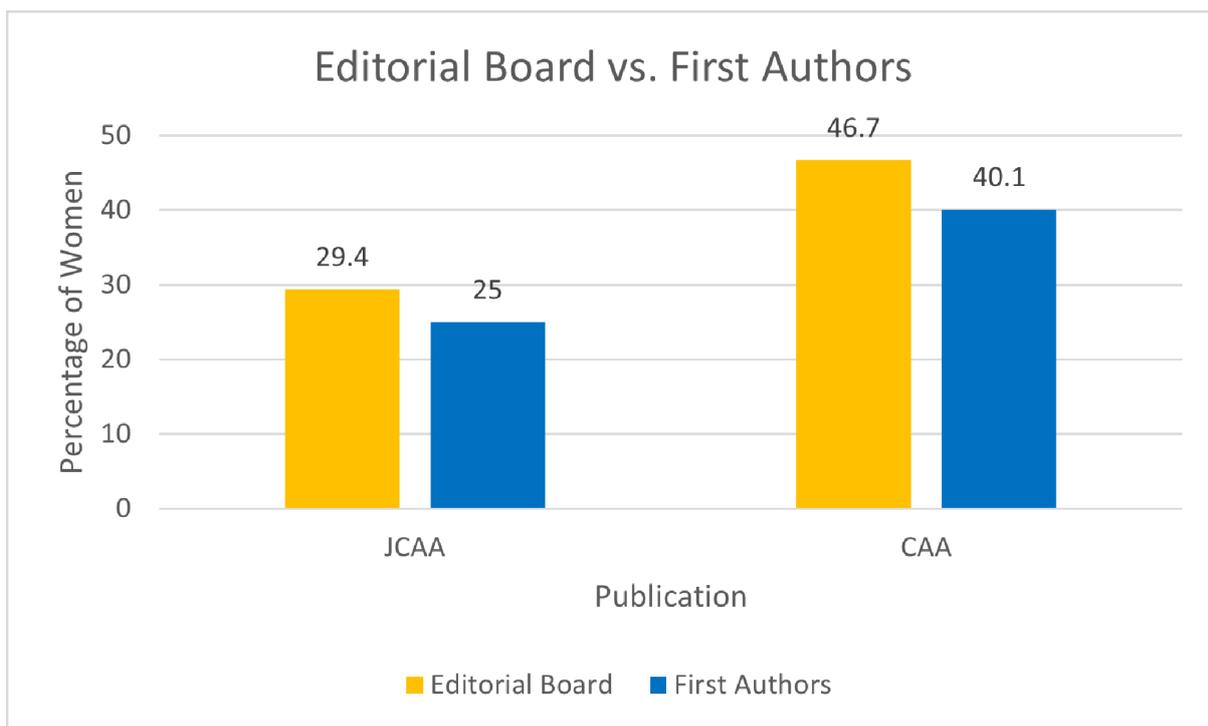
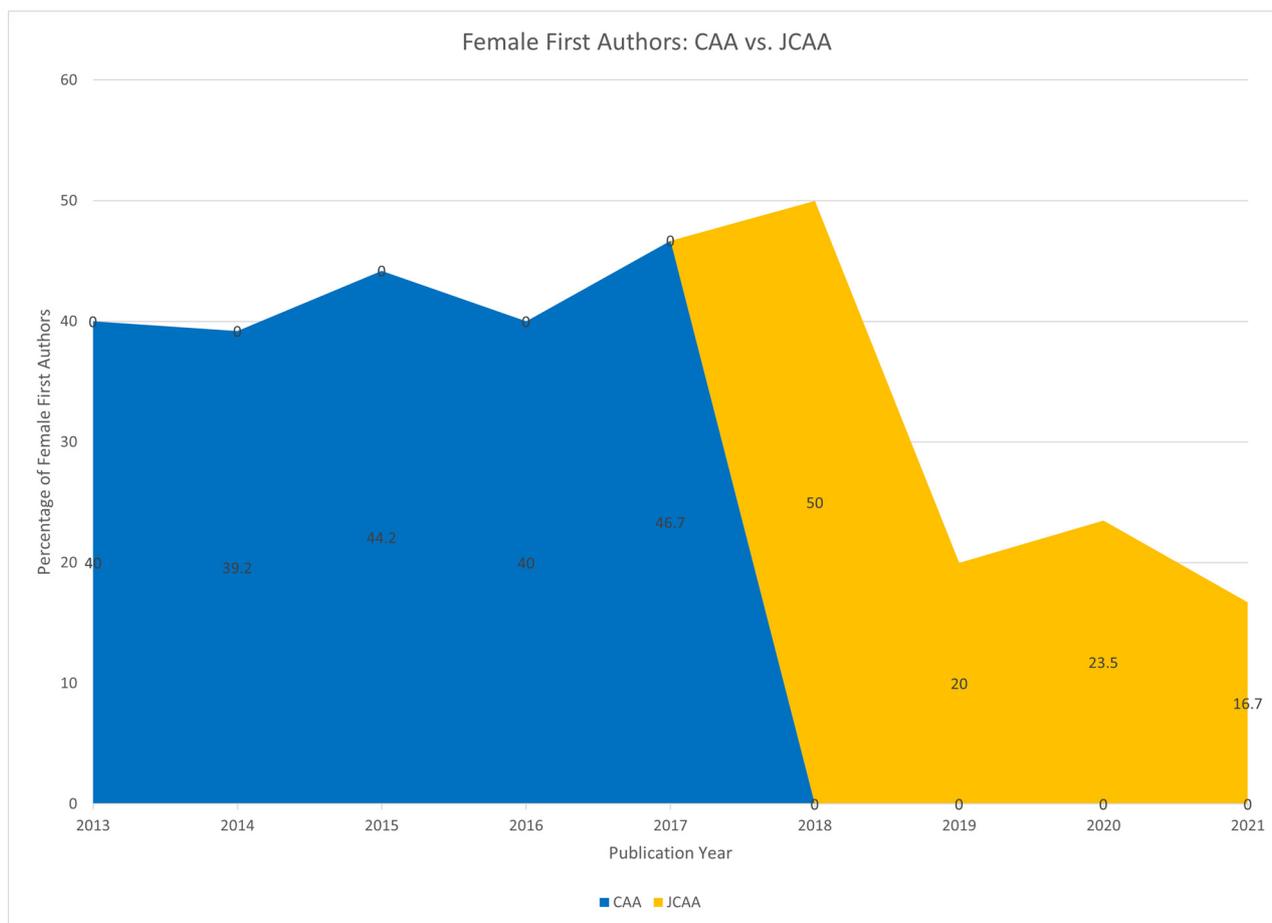


Figure 3 Comparison of Female Representation within Editorial Boards and First Authors in the CAA proceedings and the JCAA.



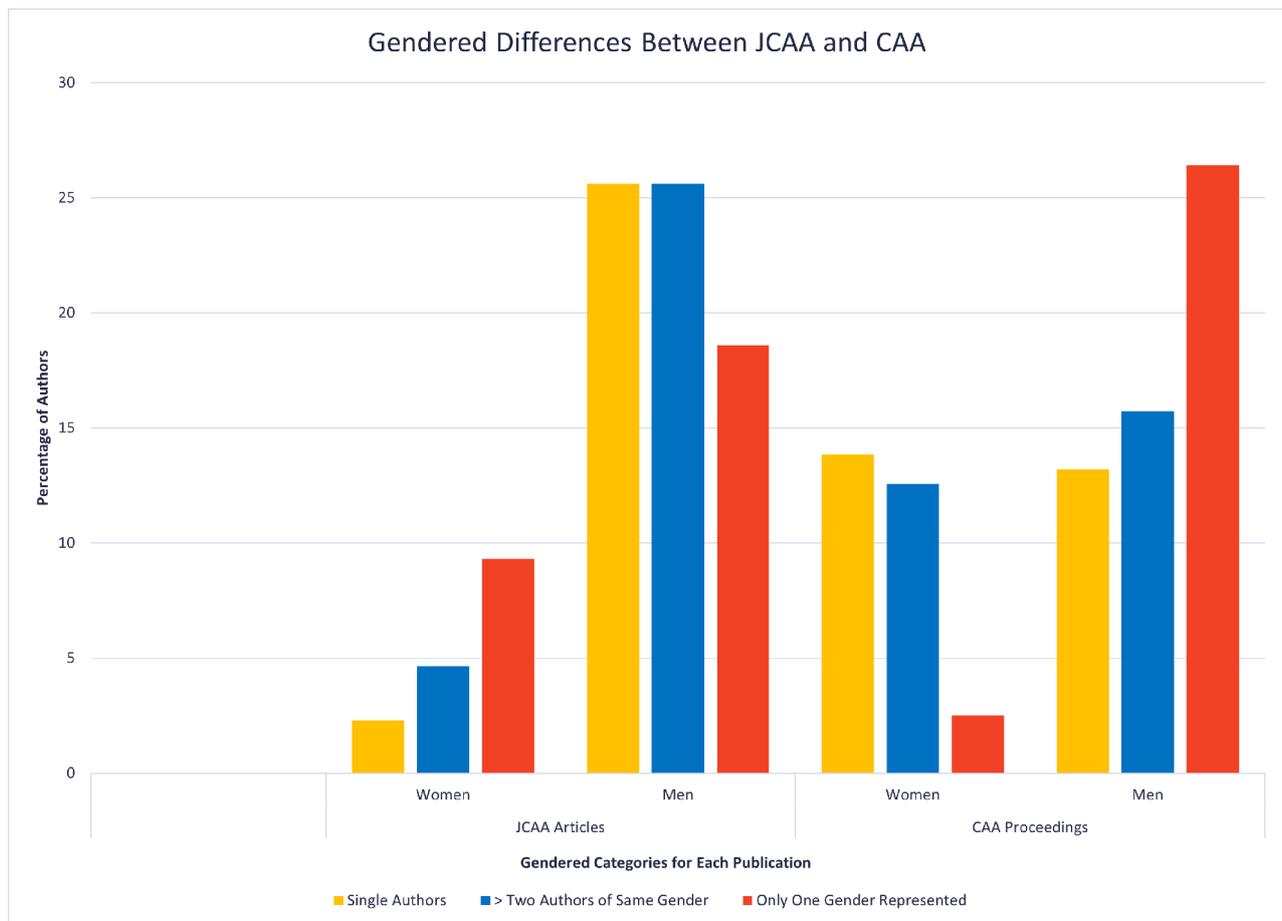
**Figure 4** Comparison of Female First Authors in the CAA proceedings and the JCAA.

JCAA is significantly lower than that of other archaeology journals, broadly speaking. Though women are only 6.5 percent more likely to be listed as an author in the CAA proceedings versus the JCAA articles, women are 72.4 percent more likely to be a first author on computational archaeology papers published in the CAA proceedings than in the JCAA, and this difference appears to be increasing over time. For example, female first authorship showed an overall 16.75 percent increase in the CAA proceedings between 2013 and 2017, while the JCAA has seen a decline of 99.4 percent since 2018 [Figure 4](#).

Interestingly, if we look at all the female authors from both publications, women comprise 45.78 percent of all authors listed. Even with nearly half of all authors being women, women comprise only 37.1 percent ( $n = 75$ ) of the first authors in the JCAA and the CAA proceedings combined. Similarly, women comprise 37.5 percent ( $n = 12$ ) of the editorial boards for both publications. This is directly comparable to Heath-Stout's (2020) analysis of 21 archaeology journals that resulted in male authors comprising 62.5 percent of all publications. Separately, however, the JCAA is far less equitable, with women representing 25 percent of first authors within the analyzed JCAA articles, while the CAA proceedings are just slightly more equitable, with 40.1 percent of the first authors listed as women. As such, these results

suggest that women are significantly less likely to publish as first authors in computational archaeology papers in the JCAA than to publish in other archaeology journals.

When looking at the overall ratios of female-to-male authors, men are significantly more likely to be listed as an author in any order than are women. Women represent only 32.2 percent of all authors in the JCAA and 34.3 percent of women authors in the CAA proceedings ([Figure 5](#)). In the JCAA, authors are twice as likely to publish as teams of only men (18.6 percent) versus teams of only women (9.3 percent), and there are 300 percent more articles with at least two or more men than women (13.95 percent) versus articles with two or more women (4.65 percent). Even more striking, publications with men as single authors represent 25.6 percent of the articles, while publications single-authored by women comprise only 2.3 percent. In the CAA proceedings, the ratio of men-to-women single authors is relatively equal at 13.84 percent for women and 13.2 percent for men, but there is a stark difference between authoring teams of only men (26.42 percent) and those comprised only of women (2.52 percent). Finally, publications authored by at least two more men than women (15.72 percent) outweigh those authored by at least two more women than men (12.58 percent) by 24.97 percent.



**Figure 5** Overall Gendered Differences Between JCAA Articles and CAA proceedings.

## 6.1. CONCLUSIONS

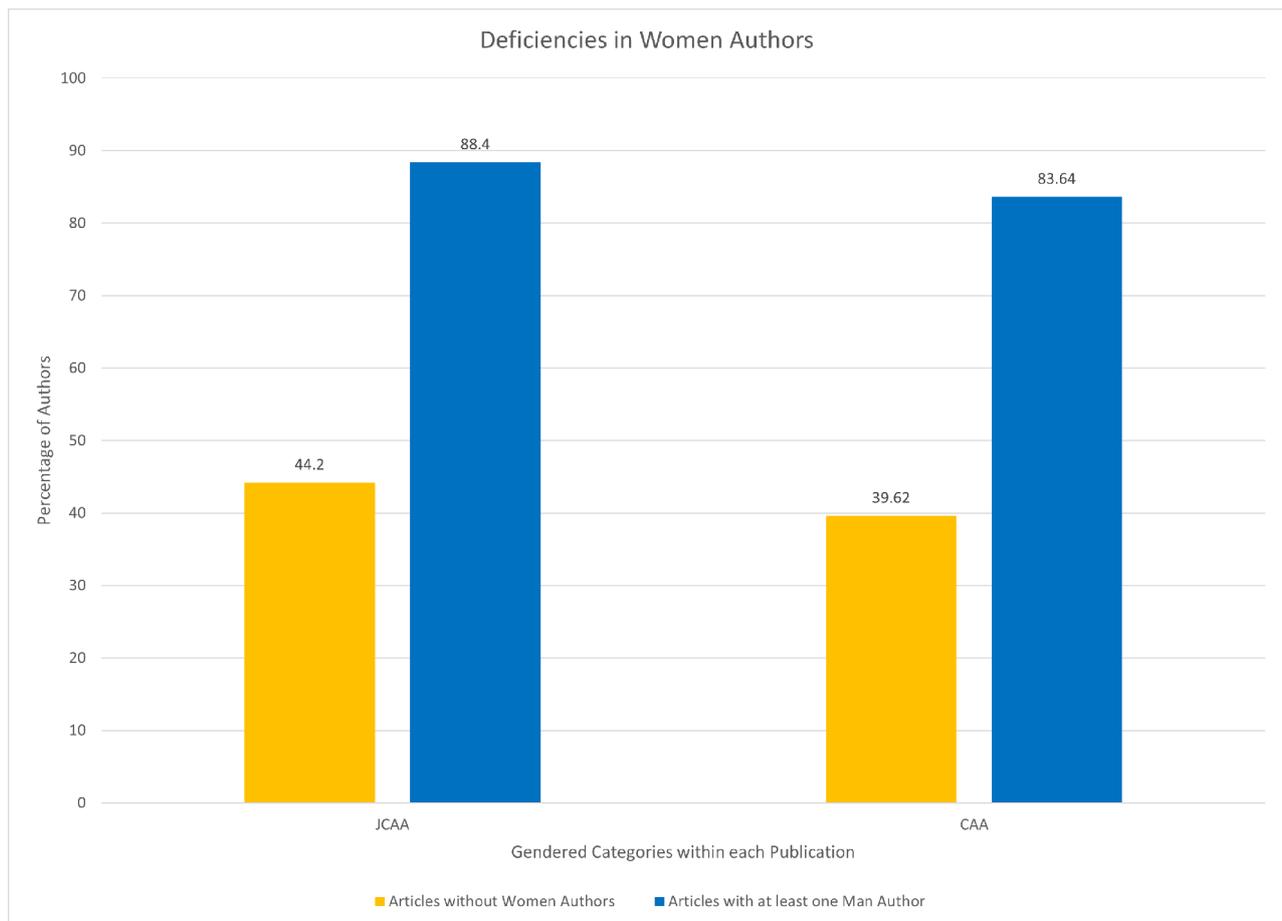
Thus, though women publish at relatively equal rates in both the JCAA and the CAA proceedings, the results of this study demonstrate that women are more likely to publish as first or single authors in the CAA proceedings than in the JCAA. Further, women are far less likely than men to publish in either venue as teams of only women authors. In fact, 88.4 percent of publications in the JCAA and 83.64 percent of publications in the CAA proceedings have at least one male author, and women are not listed as authors at all in 44.2 percent of the JCAA articles and 39.62 percent of the CAA proceedings (Figure 6).

It is unfair to separate the disparities within computational archaeology from similar disparities evident in the field of archaeology at large. Many studies have been conducted both within the US and internationally demonstrating the significant disparities that exist within the production and dissemination of archaeological knowledge. Studies in Canada have demonstrated that, as a whole, women are less present in academic archaeological research than men (Bernick and Zacharias 1995; Handly 1995; Kelley and Hill 1994; Overholtzer and Jalbert 2021). This disparity exists not only within published research but is also apparent in the number of PhDs awarded, tenure-track positions attained, and grants awarded to women in the field. Similarly, studies examining publishing in the US convey

that women in archaeology publish less and are less successful in obtaining academic positions even though women comprise two-thirds of the PhDs (Bardolph 2014; Fulkerson and Tushingham 2019; Harris and McKinnon 2016; Heath-Stout 2020, 2019; Rautman 2011; Speakman et al. 2018a; Speakman et al. 2018b; Tushingham et al. 2017). For example, Heath-Stout (2020) found that male authors comprise 62.5 percent of all publications within 21 US-based archaeology journals between 2007 and 2016.

These challenges are not restricted to archaeology, however, and extend to many other disciplines. Because the subfield of computational archaeology is especially linked to STEM, it is also important to consider gender disparities that exist within STEM fields, more broadly. A 2020 study of STEM researchers in academia in the US and the United Kingdom (UK) concluded that women in these two countries are more likely to specialize in person-oriented research (such as education, healthcare, and social work), whereas men are more likely to specialize in thing-oriented work (such as technology, engineering, and computer science) (Thelwall et al. 2020). This is not universal, however, as Thelwall et al. (2020) note that women dominate the field of Computer Science in Malaysia.

There are a number of reasons why we should increase the gender diversity in this field. First, though



**Figure 6** Deficiencies in Women Authors in JCAA Articles and CAA proceedings.

computational methods are the *how*, the methods are certainly not the *why* and should not be used simply for the sake of applying a shiny, new tool to our research. Instead, the methods should be the tools used to uncover the data needed to answer our research questions. Archaeologists study ancient humans to better understand them. Our understandings are often skewed by our own biases and positionalities, making objectivity difficult. Therefore, if the majority of archaeologists that are producing archaeological knowledge are comprised of only a single gender, that knowledge will be severely prejudiced and limited.

For example, in her push to expand archaeological understandings of women in prehistory, Gero (1991) points out that modern experimental flintknapping has, until very recently, been an almost exclusively male enterprise, and ethnographic studies of modern stone tool knappers are comprised almost entirely of males. This bias has contributed to the false assumption that men were exclusively responsible for stone tool production in most prehistoric societies, a view that continues to persist today. This androcentric view may also be informed by the fact that in early ethnographic studies, most of the ethnographers were men who would have had greater access to other men than to female informants (Conkey and Spector 1984: 4). Like archaeologists, informants also come with their own

biases, and because of this, basing our understandings of entire societies on the viewpoints of a single gender is problematic at best. As such, I agree with Heath-Stout's assertion (2020: 423) that "Although archaeologists may not be diverse, the past peoples we study are. In order to understand their experiences, we need archaeologists who hold many different identities and who are working from many different social standpoints" (Heath-Stout 2020: 423).

## 6.2. FUTURE DIRECTIONS

Without the gendered data for who submits publications, understanding exactly *why* these differences exist is not completely within the scope of the current study. It is very clear, however, that there is a significant dearth of gender diversity within computational archaeology publications, and this difference has increased over time. Though overall female authorship is virtually equitable between these two publication venues, female first-authorship is approximately 72.4 percent higher in the CAA proceedings than in the JCAA. Further, it appears that female first-authorship is rising within the proceedings and declining for the JCAA, overall female authorship shows a sharp decline for the JCAA and a moderate rise for the CAA proceedings. We can rule out gendered disparities in acceptance rates, however, as the majority

(59.46 percent) of authors amongst the 11 rejected papers submitted between 2018 and 2021 are male.

This suggests that either 1) there is a significantly greater ratio of men working in the subfield of computational archaeology; or 2) women are not submitting as many publications as men to these two venues. It is likely, however, that these two hypotheses go hand in hand. If there are, in fact, fewer women working in the subfield, then that would explain why fewer women submit publications to the JCAA and/or CAA. Analyses of specific journal venues, such as *American Antiquity* (Bardolph 2014; Rautman 2011) and *Historical Archaeology* (Beaudry and White 1994) have confirmed that women submit fewer publications, yet men and women authors are accepted at virtually equal rates. Similarly, Goldstein et al. (2018) reported that while half of Senior NSF grants go to women, women scholars apply for these grants approximately half as much as men.

Though I do not have the data to confirm it, I would also suggest that the reason that there may be fewer women in the field and/or fewer women submitting publications is because women do not see themselves in computational archaeology and other STEM fields. Thus, because men already dominate the subfield, women are reluctant to enter it. It is also possible that male authors are less likely to seek out female co-authors, whereas this may not be an issue for women. If this is the case, explicit efforts should be made to recruit and increase the number of women working in Computational Archaeology. In addition to including more women as authors on publications, this could also be achieved through the recruitment of women graduate students, the inclusion of women on grant proposals, and a commitment to hiring women into tenure-track positions focused on Computational Archaeology.

The CAA has published conference proceedings since 1973, totaling nearly 50 volumes to date. Because the current study analyzes only the most recent five issues available (2013–2017), a more in-depth analysis of all 43 issues would reveal whether differences in gender ratios have changed significantly within both authorship and editorial members since 1973. Interestingly, the gender ratios of the editorial boards are relatively equivalent to the overall gender ratios for each publication. This begs the question of whether increased diversity in editorial teams would also lead to an increase in gender equity of authors, which also relates back to assumptions 1 and 2 in the previous section. To answer this, a detailed survey will need to be conducted to assess the motivations of male, female, and non-binary authors publishing in computational archaeology.

Since this study only considers the CAA proceedings and the JCAA, it is imperative to assess whether similar disparities exist for computational archaeology papers published within other archaeology journals. Are these disparities more or less significant in different parts of the world? Finally, if we are to get a complete picture of

who is doing computational archaeology, we need to also examine any gender disparities within who is applying for and receiving funding for computational archaeology projects and positions. Moreover, this case study is limited in its examination of only gender disparities. For a more inclusive understanding of who is doing computational archaeology, the full range of the diversity of authors, which could also include nationality, sexuality, disability, and race, should be addressed in future studies. Many computational methods are uniquely suited to assemble archaeological data in ways that are quick, efficient, and reproducible in ways that other archaeological methods cannot. Because of this, these methods can be applied to a vast number of archaeological questions related to social, political, and economical situations in the past. A diverse set of computational archaeologists will undoubtedly lead to a more diverse set of research questions and subsequent understanding of past human life.

## NOTE

- 1 Following Jalbert and Heath-Stout (2021), I acknowledge that citing Robert Speakman is problematic for the following reasons. After being arrested in 2019 and banned indefinitely from the University of Georgia campus, Speakman was also banned from attending the 2020 Society for American Archaeology Annual Meeting. Many of his co-authors are early career women, however, and their contributions and work should be acknowledged. See Souleles (2020) or additional information on the politics of citing scholars accused of misconduct or ethical violations.

## COMPETING INTERESTS

The author has no competing interests to declare.

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