

Making the invisible visible: hyperlinked webcomics as alternative points of entry to the digitised Gertrude Bell archive

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AUTHOR DETAILS

Lydia Wysocki, School of Education, Communication, and Language Sciences, Newcastle University (corresponding author; lydia.wysocki@ncl.ac.uk) ORCID 0000-0002-2308-154X, Twitter https://twitter.com/@lyd_w

Mark Jackson, School of History, Classics and Archaeology, Newcastle University

John Miers, University of the Arts London (Central Saint Martins and London College of Communication)

Jane Webster, School of History, Classics and Archaeology, Newcastle University

Brittany Coxon (no institutional affiliation)

ABSTRACT

Web environments can support non-specialist access to prestigious and complex scholarly archives. We report on the creation and evaluation of webcomics that incorporate hyperlinks, a technological innovation that makes digitised artefacts from the Gertrude Bell Archive visible to learners. This shows readers the need to examine the evidence on which interpretations are based: an issue fundamental to academic researchers and archivists, but that might otherwise be obscured in educational and entertainment media. Moving beyond the established use of digitised archives by academic researchers, we explore wider issues of access and use. Quantitative analytics suggest readers read all pages of the comic and accessed digitised sources. Qualitative feedback and consultation with young people found the hyperlinked webcomics to be credible comics in their own right as well as their value as situated points of entry to archive material. Observed reader behaviour identified opportunities to encourage more structured exploration of the digitised archive.

KEYWORDS

webcomics, digitised archive, hyperlinks, Gertrude Bell, applied comics

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DISCLOSURE STATEMENT

Lydia Wysocki and John Miers note their respective ongoing practices as comics creators and publishers, and do not consider this a conflict of interest.

DATA AVAILABILITY STATEMENT

The qualitative data that support the findings of this study are available from the corresponding author [LW] upon reasonable request. The quantitative data that support the findings of this study are not publicly available as the detail collected by Google Analytics could compromise the privacy of individuals.

Introduction

Access to digitised archives is a vital part of scholarly work, yet even publicly-available archives can remain impregnable to readers outside academic and professional roles. This duality of supporting meticulous scholarship and encouraging broader uses of the same digitised sources merits attention for any archive, particularly collections with continued political and cultural significance. We use the term ‘non-specialist’ to differentiate between academic users of an archive who are familiar with archival work (as specialist researchers and practitioners), and pre-university students who are not, or not yet, familiar with archival work (as non-specialists); this continuum also includes general interest adult readers and interdisciplinary teams. This is an assessment of skills, not an implied value judgement. We consider widened access to archives essential to showing non-specialists the significance of primary sources for the writing of history, and suggest that creative digital approaches can advance this aim.

Our project *Gertrude Bell: Archaeologist, Writer, Explorer* explored the use of hyperlinked webcomics as a method to give non-subject specialists and non-researchers, particularly young adults, points of entry to a digitised archive. The comics are free to read online: <https://research.ncl.ac.uk/gertrudecomics/>. Our interdisciplinary team pooled specialisms in archaeology, education, outreach and engagement, cartooning, fine art, and web development. Though the collaborative project and research stemming from it are closely intertwined, in this article we distinguish between the process of creating the comics and the evaluation of those same comics. We first introduce the Bell comics project and contextualise this with literature on uses of comics in archaeology and technical innovations in web comics, addressing the politics of representation in cartooning, and access to information and to technology. We then distil the process of making archives-based web comics, with attention to the affordances of digital drawing and hyperlinked hotspots. We present and

discuss quantitative analytics and qualitative reader feedback as empirical insights into the success of these comics in enabling non-specialist access to historical narrative and archive sources.

The Gertrude Bell Archive is the books, papers, and photographs of Gertrude Bell (1868-1926), the British woman who established the Iraq Museum in Baghdad and served as Honorary Director of Antiquities in Iraq. Bell's work and archive on the archaeology and architecture of the Middle East retain resonance for contemporary archaeology and politics, and her legacy has been judged both favourably and critically. Bell has been championed as the driving force behind the decision to create a monarchy in Iraq and to choose the Hashemite, Prince Faisal, as its first King. Part of the strategy implemented by Winston Churchill following the Cairo Conference in 1921 was to establish Iraq as a new nation state following the fragmentation of the Ottoman Empire at the end of World War I and Bell is renowned for her role in determining the boundaries of that new country. Her prejudices against specific ethnic groups were translated into administrative policy and law, having a considerable impact on groups including the Kurds (Collins and Tripp 2017, 11). She was unusual as a woman in a key role in the male-dominated world of civil and military administration, though as an opponent of women's suffrage (17) it would be inaccurate to suggest Bell as a proto-feminist. Despite scholarly attention to this complex woman and her contentious though crucial legacy, Bell has remained largely unknown to many in Britain. A major step in changing this has been the achievement of UNESCO International Memory of the World Register status for her archive (Newcastle University 2017).

The full digitised Bell archive has been available online for over 20 years with no login or paywall but this cannot be conflated with ease of access for non-specialist readers. Its interface is designed for academic researchers. Transcribed letters from her personal and professional correspondence are formatted to give researchers access to full text of artefacts

but appear as they were written: a block of text without paragraph breaks, or interpretation by the archive team. Bell's 7843 photographs are accompanied by archivists' descriptions of each image but no further interpretation.

This earlier digitisation meant we could build on existing content to identify ways to make those digitised artefacts more usable for young people. We created a collection of seven comics each presenting part of the story of Bell's life and work. Publishing these online as webcomics made use of the affordances of the web environment by incorporating hyperlinks to digitised archive content. Each semi-transparent popup shows a brief summary of the artefact (text or photograph) and a preview image where possible, to encourage the reader to click through to the digitised artefacts hosted within the main archive website. The comics can be read without engaging with the popups, though the choices of artefacts and summaries add an additional layer of content and context. The webcomics thus offer alternative points of entry to the Bell archive, reaching beyond continued interest from scholars to a non-specialist readership.

Our use of webcomics to offer a non-specialist access to an archive is situated within a larger professional and institutional push for broader access to archives. The National Archives' strategy (TNA 2009) offers a tripartite structure to show how our exploratory project addressed this larger objective: (1) shaping a shared sense of identity; (2) providing a stimulating environment for learning; and (3) sourcing evidence. First, Bell's family connection to the North East of England offers a regional connection for our local schools and Young Archaeologists' Club, and her work offers comparable geographical connections for residents (and the diaspora) of the Middle East. Her biography offers windows to topics including: the formation of modern Iraq; the British Empire and issues of national sovereignty; and the roles of women in history. Second, a digital environment affords the use of hyperlinks in web comics and so offers different possibilities to print comics. The web

environment has supported creative innovation in fiction comics encompassing both hobbyist tinkering and deliberate development projects (Goodbrey 2013). Third, the use of hyperlinked hotspots to make specific source artefacts visible. Whilst academic citations and bibliographies serve this purpose admirably, the immediacy of a clickable preview of archive content makes source material particularly explicit to readers. The value of evidence-based knowledge is fundamental to the roles of archaeological and archives professionals. In exposing the need to examine the evidence on which interpretations are based, our webcomics offer an innovative way to support learning whether through formalised curricula or broader work with heritage groups and organisations.

Having outlined this overarching focus on widening access to archives we turn now to literature on comics and heritage engagement, including comics dealing with contentious histories, and consider pertinent innovations in comics published online as webcomics. This rests on an understanding of comics as a medium characterised by interdependent and sequential words and pictures, broader than any single art style, narrative genre, or publication format. We then give an account of our process in this project, discuss qualitative and longitudinal quantitative evidence of the success, and identify next steps.

Literature review: comics and archaeology, innovation in webcomics

The use of the comics medium in research communication is a vibrant and growing field. A summary of comics in archaeological research and engagement is provided by Swogger and colleagues' online panel discussion on comics and archaeology (Swogger 2014). This traces examples from archaeology as an inspiration for – or convenient plot device in – comics-form storytelling, and the uses of comics in professional contexts. These include De Boer's address to a readership of archaeologists as 'fellow shovelbums' (De Boer 2004) with a focus on

shared understandings of field experience (Swogger 2015), Sackett's (n.d.) *Archaeological Oddities* series of light-hearted and informative comics about artefacts already accessioned to collections, and examples of comics used to communicate the progress and findings of ongoing digs particularly to local residents (Martin and Shannon 2018). We found these comics invaluable as paradigms of clear communication for targeted audiences, using a range of art styles and narrative techniques.

Hergé's *The Adventures of Tintin*, a comics series as familiar as it is problematic, became a key reference for our project. The early twentieth-century simplified ligne claire style of drawing and adventurer-explorer genre offered a period feel and prompted discussions of the potential pitfalls of telling the story of Bell as an archaeologist whose work was steeped in power and privilege. *Tintin* has been critiqued for its use of visual and narrative stereotypes including in *Tintin au Congo* (1946) caricature 'so racially offensive that it has been censored in Zaire since independence' (Hunt 2002, 94), with colonial settings and at best tokenistic, at worst explicitly racist, depictions of 'native' characters used to advance Tintin's story. Yet Hergé's series continues to receive uncritical scholarly attention including hagiographic accounts of *Tintin's* use of the comics medium. Forceville's (2010) focus on the emanata of *Tintin et les Picaros* (Hergé 1947) offers a comprehensive glossary of these movement lines and other flourishes, yet pays no attention to the characterisation of fictionalised guerrilla fighters in a fictional Latin American country as corrupt, child-like drunkards. This is at its core an issue of representation (Hall 1997), with the use of humour as an in/out group mechanism to uphold social boundaries through the guise of humour (Billig 1982). In the comics medium this tension between clarity of communication and oversimplification is particularly acute, and is entwined with the practicalities of drawing and reproducing a cast of characters who are differentiated and recognisable in a range of poses and situations: a more labour-intensive endeavour than single-image illustration or portraiture. This cannot excuse

the long history of the use of racialised caricature in comics, which dates at least to the anti-Semitic stereotype of the sidekick to nineteenth-century comics star Ally Sloper (Sabin 2003), but indicates its prevalence.

The almost eight thousand photographs taken by Bell on her expeditions were our starting point for who to represent in our comics. Now digitised, these photographs are an invaluable record of people, cultural practices, and architecture from multiple ethnic and religious groups, documenting people and places that have since changed or been destroyed. Close and explicit links with archive sources offered us a way to succinctly present Bell's interactions and abiding relationships with named political and social leaders in the historical region of Mesopotamia, with sufficient context that these were not only a foil for her adventures. This cannot evade the issues inherent in Bell's archive. Gallagher and Kim (2008) have presented the very medium of photography, particularly the use of photography in research, as inseparable from its colonial roots. Applying their lens to Bell's archive argues that there are no neutral interactions between photographer and subject, imbued as those interactions are with a colonial desire to catalogue. Moreover, the privilege implicit in the collation, preservation, and digitisation of Bell's archive cannot be overlooked. The cost and practicalities of international travel and photographic equipment speak to Bell's family wealth, and a level of confidence that her work was and remains significant and worthy of preservation. Nor can this be extricated from the history of British involvement in the Middle East. It is however essential to consider the value of Bell's archive in cataloguing ancient sites especially those from the 1899-1914 period of the Ottoman Empire. Photographs taken in 1900 include images of the early Islamic palace at Mshatta (modern Jordan), the gate of which was transported to Germany in 1903 as a gift from the Ottoman Sultan to the German Kaiser which explains its current location in the Museum of Islamic Art in Berlin (Jackson 2015, 21; Troelenberg 2016). A further fifty images taken that same year at Palmyra include

the Triumphal Arch, the Temple of Bel and the Temple of Baalshamin, all destroyed in 2015 by the so-called Islamic State. Numerous sites photographed in the 15 years preceding the outbreak of World War I have been dramatically changed by events over the past century: the Bab Talisman, Baghdad, destroyed in 1917 by the Ottoman army (Cooper 2016, 135); the desert palace at Ukhaidir in Iraq (Bell 1914), recorded as a ruin in over 160 photographs by Bell before it was renovated by Saddam Hussein; and many more sites excavated by archaeologists since she recorded them or destroyed by other human and environmental factors. As indicated by the range of perspectives on Bell included in the exhibition catalogue *The Extraordinary Gertrude Bell* (Jackson and Parkin 2015), the Bell Archive collates much of her complex body of work as a platform from which scholars continue to reach contrasting conclusions on her motivations and actions.

This complexity of content, in addition to the complexity of integrating the use of hyperlinked content, reinforced our decision to work with a professional comics creator. John Miers is an experienced cartoonist whose work includes experiments in the comics form and scholarship theorising the drawing of comics (Miers 2017a; 2017b; 2015). His recruitment to this project followed his earlier involvement in *Newcastle Science Comic* anthology (Wysocki and Thompson 2013), where his comic 'How To Train Your Robot' (Miers and Hedley 2013) demonstrated both technical skill in digital drawing and work in collaboration with academic researchers as the use of comics for specific purposes, as applied comics practice. Though acknowledging that anyone can make comics, John's skillset and professionalism were essential to this project. Whereas Walsh's (2009) digital exhibition of children's comics showed that politically aware comics can be created by children and exhibited online, our project required greater complexity in both its content and web development. Heightened media focus on Bell around the centenary of her work included the release of two films (Oelbaum and Krayenbühl's *Letters from Baghdad*, 2017; Herzog's

Queen of the Desert, 2015), the archives-led exhibition *The Extraordinary Gertrude Bell* (Jackson and Parkin 2015), and progress towards achieving UNESCO recognition (Jackson and Johnson 2017). Our aim of supporting greater public engagement with the archive necessitated a final project output with consistently high production values and clarity of communication.

Earlier practitioners have written of the potential inherent in digital comics (McCloud 2000), and it is through technological innovation that this potential is being realised beyond the hosting of image files online. Goodbrey has advanced this through hypercomics as web-based comics with an ‘element of reader choice and interaction’ (Goodbrey 2014). His later Electricomics research and development project (Goodbrey 2015) advanced tools for making and reading comics that include motion, though its initial release Open Source software as yet limits uptake. Few existing webcomics platforms offered the layered web environment needed for our use of hyperlinked hotspots, nor were they permitted to be installed on university servers for security reasons. Commercially-available comics reading apps typically offer a portal through which to access digital rights managed PDFs or bespoke file formats, either as static pages or a guided view showing each panel in turn. Signing up to that managed environment can offer self-identifying comics readers convenient access to their preferred reading material, but that same signup process and managed environment could be a barrier for readers who might read comics if presented to them, but not go out of their way to discover comics.

Having provided an overview of issues in access to archives, comics for archaeological engagement, and innovation in web comics, we now give an account of our process in developing the Bell webcomics. We will then present and discuss quantitative and qualitative indicators of their use.

Process of creating archive-based hyperlinked webcomics

Initial discussions sharing expertise within our project team clarified our aims of using comics to provide a non-specialist point of entry for young people to the narrative of Bell's life and work, to specific artefacts within the Bell archive, and indeed the foundational understanding of the value of evidence-based research and understanding. This included a decision to not align this with specific UK National Curriculum (Key Stages 3 and 4) content but with a target readership of ages 11 to 16 in the UK and beyond. From schools outreach and archives engagement work, colleagues in the Newcastle University Library Education Outreach Team (archives engagement professionals and former teachers) advised that links between Bell's work and the National Curriculum are typically underused. With exceptions, Key Stage 3 and 4 teaching on the two World Wars typically focuses on Western Front and Gallipoli rather than Eastern Front or other theatres despite the impact of those conflicts in the Middle East on the modern world, and for teaching on the role of women in twentieth-century history to focus primarily on Suffragettes. Bell's archive offers other windows onto these same themes. Her companion Doughty-Wiley was killed at Gallipoli, then in the Ottoman Empire, and Bell was a founder member of the Anti-Suffrage League and later secretary of the National League for Opposing Women's Suffrage (Winstone 1978, 110; Berry 2017; Beaumont 2015). Bell was recruited by British Military Intelligence in 1915 and sent to Mesopotamia by the Arab Bureau in 1916, then spent the final decade of her life working for British interests first in Basra and from 1917 in Baghdad. An indicator of the esteem in which Bell was held is that she was asked to write *The Review of the Civil Administration of Mesopotamia*, a White Paper for the British Government (Bell 1920). Through work with the North East branch of the Young Archaeologists' Club and undergraduate admissions experience we noted that young people's interest in archaeology typically develops outwith the school curriculum, particularly given the recent withdrawal of

the A-level Archaeology qualification (AQA 2018; Gov.UK 2016). These discussions strengthened our decision to stay close to the archive content rather than too specific a link to any single framework or age group. Our team also used strengths in visual and participative methodologies in education (Clark et al. 2013) and enquiry-based learning (Leat 2017), though at this exploratory stage we are cautious not to overstate these wider pedagogical connections.

The scoping phase of our project took an iterative approach in deciding what to include, to ensure that the comics both addressed key aspects of Bell's work and made the most of digitised artefacts. Archives colleagues identified strengths within the collection particularly to provide meaningful context for the people with whom Bell interacted, then John began planning comics to include sufficient narrative and visual interest to make readable, even compelling, comics rather than the clunky delivery of information. We summarise our process as follows:

- initial scoping and planning (Mark, Lydia)
- initial discussions (all)
- initial drafts (John)
- review of initial drafts (all)
- redrafting; full narrative draft and character design based on archive sources (John)
- YAC first feedback session (Jane, Lydia)
- amendments based on YAC feedback; further development to full colour final artwork (John)
- initial web development (Brittany)
- proofreading (all)
- adjustments for accuracy (Mark, John)
- YAC second feedback session (Jane, Lydia)
- final web development (Brittany)

We will illustrate this with examples from our process with particular regard to issues of factual accuracy, and the specific affordances of the digital comics medium.

<<<Fig.1 Comparison of draft (left) and final (right) comics representations of Bell's time at university>>>

First, the prioritising of factual accuracy without sacrificing clarity of communication. John's initial draft depicting the fact of Bell's success at Oxford as a scene at her graduation ceremony was revised: Bell won the equivalent of a First in Modern History but she did not attend a graduation ceremony because at that time although women took the same exams as men they were not allowed to graduate. Final artwork shows her viva voce exam (Fig.1). The dialogue used direct quotes (from Bell 1927) whenever possible, balancing this with an awareness through comics writing experience that clarity of communication could have been impeded by too close an adherence to original language. This emphasis on factual accuracy recurs throughout the comics, with a focus on making source material available to readers. In chapter 3, the church on the summit of the Kara Dagh (Karadağ) (row 2 panel 2) is shown in clearer detail by changing to colour in this drawn version from Bell's original black and white photograph (Fig.2). The Neo-Hittite (Luwian) hieroglyphic inscription is based on the field drawing by Ramsay and Bell (1909, 515; fig. 3), also visible online in a cast made by Bell and presented to the British Museum in 1908 (British Museum 2017, Cast C.217). Mark and John's collaboration ensured that the illustration of the inscription showed the hieroglyphs accurately based on Bell's records. The art style employed for the comic ultimately enabled John to integrate the clarity of Ramsay's on-site sketch with the environmental detail of Bell's photograph; drawing this using digital rather than traditional media facilitated the necessary revisions and adjustments.

<<<Fig. 2 Comparison of the church on the summit of the Kara Dagh (Karadağ) in the webcomic (left) and in Bell's photograph (right)>>>

<<<Fig. 3 Ramsay and Bell's field drawing of the Neo-Hittite (Luwian) hieroglyphic inscription >>>

A further example of historical accuracy is in chapter 4 of the comic, when Bell learns of Doughty-Wylie's death at Gallipoli. John's initial draft had Doughty-Wylie as a lieutenant colonel holding a revolver, until Mark referred to several eye-witness reports of Doughty-Wylie's death included in the Victoria Cross record each of which reported that he carried either a cane or a walking stick, "waving his walking-stick and calling on the men to follow him, he led a gallant charge" (Creagh and Humphris 1920, 170-1).

Our second example of process focuses on making use of the affordances of the digital comics medium. In chapter 2, when property was stolen from her tent Bell knew exactly who to call based on her awareness of local social hierarchies and organisational structures. This prompted a thorough, even overblown, response from the Chelabi. The full text of Bell's letter reveals the extent to which diplomatic concerns influenced the behaviour of all involved:

The Chelabi worked like a Trojan, but he had a personal reason, poor dear, for in the end suspicion was bound to rest on him as the head of the tribe, as in fact it does now rest, though I am persuaded unjustly and I mean to clear him before the government at Diarbekr.

(Letter to Florence Bell 28 May 1909)

Power and influence are in evidence here on both sides, as was Bell's engagement with and sensitivity to local society. Depicting this incident made use of the specific affordances of the comics medium. Drawing the stolen (missing) items listed in her letter home as the (opaque) ghost images of objects makes visible what was not recorded in Bell's photographic archive (Fig.4): the issue is the absence rather than the material presence of these items, which could not be shown in a single photograph. Comics as a sequential medium shows this quickly, providing dense context for an anecdote that at its core is about Bell's local connections more than the theft itself; the hyperlink to the digitised letter adds an additional layer of content. A further pertinent example is in the use of portrait photographs in hyperlinked previews so readers can hover the cursor over the hotspot to quickly compare photographs with drawn

likenesses, offering a reminder of the factual basis for these comics without undue interruption to readers' reading: these are real people from history, not *Tintin's* caricatured supporting cast. Drawing what a camera could not have recorded echoes Nyberg's (2011) reading of *Safe Area Goražde* (Sacco 2000), where Sacco's comics-form journalism includes the visualisation of events based on witnesses' oral accounts. Our multi-layered digital comics take this further in incorporating relevant visual sources where possible, creating a synthesised depiction of events for which there is no visual evidence.

<<<Fig.4 Comics panel showing the presence and absence of stolen property>>>

Quantitative and qualitative evidence of reading

Having shown our process in creating the comics we now turn to the empirical phase of our work. The first feedback session with 20 Young Archaeologists' Club (YAC) members, aged 8 to 18, took place on site at their summer dig at Derwentcote steelworks complex. Lydia brought large printouts on oversized clipboards of John's first drafts, with examples of the proposed final artwork styles. Having found in previous empirical research that comics were positively received by adults and children who did not self-identify as comics readers (Wysocki 2018, 7), it was no surprise that whilst only a minority of these YAC members said they read comics the vast majority still expressed an interest in our project. The purpose of the project was explained and participants were assured that their involvement was anonymous and optional.

Inviting YAC members to read the draft comics and write their feedback in the margins of the page was an effective way of gathering targeted comments. YAC feedback directed us to more clearly differentiate between different forms of written text that included: characters' speech, captions by an unseen narrator, extracts from Bell's letters and diaries, text within images (including the Luvian hieroglyphics in Fig.3), and labels on maps. John revised each

comic to include different fonts to differentiate between types of text, and other visual effects including a torn notepaper effect behind handwritten extracts. Some YAC members who did not typically read comics were unsure where to start reading each page of the comic: top to bottom or left to right? Practical experience and familiarity with Comics Studies literature on Z-path reading patterns (Groensteen 2007) meant John and Lydia had taken this for granted, making this early-stage consultancy input from young people invaluable. John adjusted the design of each title panel to provide a consistent top left anchor for each page, adding the visual device of a series of portraits of Bell from childhood to adulthood. Each of these revisions ultimately strengthened both the clarity of communication, and the visual interest and coherence, of our series of webcomics.

As John progressed towards final artwork on each page of the comic, web developer Brittany created the site infrastructure in T4 content management system. Each chapter of the comic was presented as a single image file, overlaid with a series of transparent hyperlinked areas as a combination of HTML and CSS. Each hyperlinked area included an orange dot that, when a cursor is moved over it, shows a preview of the digitised artefact relevant to that aspect of the comic. The repeated orange dots aim to attract readers' attention to the presence of some form of additional content without overpowering the comic text and artwork. The orange colour fits John's colour palette particularly Bell's hair, but is otherwise infrequently used in the comics so remains prominent. We conceptualise the hyperlinked comics as a net that sits over the main archive website and hooks into it, though these are coded as two separate websites. Introductory text and images on each website ensures that this connection is made clear to visitors, but separation ensures that the ongoing use of the digitised archive by academic researchers is not impeded either through forced engagement with the comics to access artefacts or through prolonged webpage loading times. The website is optimised for desktop/laptop web browsers and also readable on tablet web browsers. In-browser access

means there is no app or software to download, which could otherwise be a barrier for schools using managed networks.

Following proofreading and user testing by our team on a variety of web browsers, the second feedback session involved eight YAC members with an average age of 15. This took place in an archaeology teaching laboratory with large-screen projector and laptops, during one of YAC's sessions at Newcastle University. The purpose of the project was explained and participants assured that their participation was anonymous and optional. The critical friend user testing role was again well received by YAC, and though not all YAC members attended both this and the site visit feedback session they welcomed this sustained consultative involvement in a technology-based project. We began by watching and discussing the *Queen of the Desert* (2015) film trailer, which was met with scepticism about how much archaeology Herzog's film would include. Having begun this critical conversation we asked YAC members to read the comics online and explore the hotspots in groups of 2 or 3 people per laptop, to encourage discussion beyond only individual opinions. Their task as a group was to make notes about any technical errors, and their opinions on what they did and did not like about the site overall. Asking and prompting YAC members to provide feedback on both the web functionality and also the archive-based nature of the comics gave informal but clear parameters for their role to minimise the risk of only receiving a list of broken links. Feedback was discussed as a group, with written comments and Jane's written observations read and discussed by the research team after the session.

YAC feedback was positive, brutal, and constructive. Comments identified some typographical errors and missing web links, as straightforward corrections later made to the comics. As expected from working with an experienced comics creator, the overall readability of the comics was well received. The key insights from this session came from observing how YAC members interacted with the webcomics: clicking on hotspots with

digitised photographs and sometimes clicking further to view other photographs in that image gallery, which suggests an interest in exploring the archive further. As the following quote from Jane's reflections shows, however, YAC members tended not to click on links to transcribed text:

Our collective feeling – and my own observation watching the kids using the website – is that they click on the hotspot, but then spend just a couple of seconds with the archive diary entries and photos. I think they are put off by the length of the text in the former and the lack of child-friendly info in the latter (black and white images, no maps – so where is 'Baalbek' and who is Ba'al etc). ... I must emphasise that the kids loved the comics themselves – it's the higher purpose of engagement with the archive that is presenting a few more challenges!

(Jane Webster, email 19th Oct 2015)

There is a stark contrast between our full-colour comics presenting panel-by-panel information designed for non-specialists, and digitised photographs taken as documentation of archaeological sites. Bell's letters and diary extracts were not intended for non-specialist readers either in their writing or in their digitisation. Compare the visual impact of the full text of a transcribed letter (Fig.5) with the highlighted comics panel (Fig.6) that addresses the same content. The comic presents dense information in an engaging way, whereas the transcribed letter is presented for academic researchers. We will return to this issue in the discussion session of this paper.

<<<Fig.5 transcribed letter in digitised archive>>>

<<<Fig.6 Chapter 3 (panel outline added for emphasis)>>>

This YAC feedback began to suggest that the comics were an accessible point of entry to exploring Bell's archive, and also that having facilitated this access there could be a need for further supported interactions with the archive. Following this initial developmental feedback we made minor adjustments and launched the website, promoting this through our professional networks particularly to archaeology researchers, archivists, and teachers, highlighting Bell's connections to the North East and crossover with the 2015 exhibition

(Jackson and Parkin 2015). The next phase of our project used web-based methods to gather anonymised evaluation data collection in keeping with our project's approach to exploring, rather than proving, the usefulness of comics for digitised archives engagement. Google Analytics gathered longitudinal data on user behaviour and Twitter analytics offered an indication of our project's spread through social media. These quantitative measures were augmented by qualitative feedback questionnaires (n=19); this low response rate meant we used that questionnaire data as additional insights not core evidence. We now turn to present our analysis of these data to show the impact of our project thus far, and discuss next steps that could facilitate even greater engagement with the digitised Bell archive through webcomics.

The longitudinal quantitative findings discussed in this paper cover the 36 month period from the launch of <http://research.ncl.ac.uk/gertrudecomics/> on 1st November 2015 to 1st November 2018, and Bell comics continues to be live. In this period 7434 individual users visited the website 10207 times, which shows that 89% of users were new visitors to the website and 11% of users were returning visitors. This shows we have welcomed new visitors to the website (engaging a wider audience with research) not only engaged repeatedly with a small number of users. In this period there were 55576 page views with each visitor clicking on an average of 5.5 pages per session, which Google Analytics presents as a mean average of website visit session durations based on measures of clicks on webpages. This is positive news as it shows visitors have on average clicked on most of the 7-page webcomic (plus project information pages), suggesting that the webcomics held visitors' interest. This finding is supported by a mean average session duration of 16 minutes 10 seconds, which we suggest is enough time to read most pages of the comic and interact with at least some archive hotspots.

Turning to consider the global reach of our comics, Table 1 show the most frequent visitor locations by country and Table 2 shows the most frequent visitor settings by language.

Top 10 visitor locations by country	Number (percentage) of sessions
United Kingdom	2381 (31.7%)
United States	1038 (13.8% %)
Turkey	887 (11.8%)
France	416 (5.5%)
Australia	289 (3.9%)
Germany	232 (3.1%)
Saudi Arabia	216 (2.9%)
Italy	187 (2.5%)
Canada	135 (1.8%)
Netherlands	113 (1.5%)

Table 1: Website visitors by country

Top 10 visitor settings by language	Number (percentage) of sessions
en-us (American English)	4660 (62.2%)
en-gb (British English)	
en-au (Australian English)	
tr (Turkish)	802 (10.7%)
tr-tr (Turkish)	
fr (French)	338 (4.5%)
de-de (German)	238 (3.2%)
de (German)	
ar (Arabic)	207 (2.8%)
it (Italian)	92 (1.2%)

Table 2: Website visitors by language

These data depend on Google's settings based on ISO country and language codes so may include anomalies; the collapsed codes in Table 2 summarise variations in regional language (as shown in users' computer language settings) to allow analysis at a consistent level. The data give an indication of the geographic spread of website visitors. It is unsurprising that English is the most frequently used language setting: over half of all websites are in English (Hootsuite 2018). Thinking of Bell's life and work in the Middle East, it seems logical that our comics have had visitors from Turkey and Saudi Arabia, in addition to high rankings for Turkish and Arabic on the languages list. The high rankings for German seems to correlate

with a particularly active German fan website for Herzog's film. These regional and language setting findings suggest that there could be an even wider audience for our project if we were to translate the comics into Arabic, Turkish, and other languages on this list; indeed, these data offer a rationale for which languages to focus on that is more targeted than simply choosing languages widely spoken around the world. Relatedly, whilst Google Analytics does present some data by gender and other aspects of identity, as far as we can tell this is based on assumptions about browsing habits not rigorous self-reported identity data: leaving us unable to use it as part of this rigorous academic analysis.

Further engagement with readers was captured through social media quantitative analytics. Twitter analytics show that our main tweet promoting the comics has been seen 14946 times on Twitter; 539 people interacted with (clicked on or shared) this tweet, and it has had 61 retweets (shares) from other accounts to date. This compares favourably with our other professional use of Twitter accounts and, though not reaching the mythical numbers of viral content, helped forge connections with relevant professional accounts. The accounts that retweeted this tweet include academics (personal accounts particularly from archaeologists, archivists, librarians), organisations (including British Institute for the Study of Iraq, and Palestine Exploration Fund), and comics creators/readers. We do however note from comparison with Google Analytics data that social media traffic represented only 9.1% of all visits to the webcomics, with most (73.4%) visitors to the website going direct to the web address; others used a search engine (10.1%) or came via links on external webpages (7.4%). As such we present these Twitter analytics as an insight into networking with scholars and readers. This social media activity led to an invited interview with Pipedream Comics (2016) and to our comic being featured on ComicStripOfTheDay.com (2015). For both these comics review websites it was technological innovation in comics that interested reviewers, with less attention to Bell as an 'unlikely webcomic heroine' (Pipedream Comics 2016).

A further tranche of qualitative feedback came from a short questionnaire embedded in our comics website using SurveyMonkey software. From over 5500 individual web visitors when the questionnaire was live, we received 19 completions. This low response rate is a common issue for online research methods (Evans and Mathur 2005) and whilst these responses cannot be considered a statistical sample they offer useful insights into readers' responses to the comics. Write-in text responses suggested respondents were already fans of Bell, describing this contentious historical figure as '*inspiring*', '*adventurous, intelligent, and brave*'. When asked about the comics responses were generally positive, and indeed 3 of 19 respondents made specific reference to our use of hyperlinked hotspots within the comics, for example:

I grew up reading those classic comics of literature in the 1960s - so I am drawn to comics. But the way you combined those orange dots with photos, letters, etc. was so imaginative! Thanks!

One response stood out for its bluntness:

at no time is the Birthplace WASHINGTON County Durham mentioned - Afraid of your NE roots??

This contextual information is indeed presented as the prominent first line of text on the website homepage, in addition to Newcastle University branding on the comics and archive websites. The comment could suggest that this respondent focused on the comics rather than the website as a whole, or had a particularly strong interest in Bell's North East connections rather than her international work, though as anonymous feedback this remains unknown.

Discussion

We present our use of hyperlinks to add content and context to webcomics as a creative innovation in its own right, as well as our use and evaluation of the same comics for access to the digitised Bell Archive. Interest from readers is evidenced quantitatively by the number

and duration of visits to our webcomics, and qualitatively by feedback from readers. Our webcomics were created to coincide with the *Extraordinary Gertrude Bell* exhibition and the total number of visitors to the digitised Bell archive was indeed higher in the exhibition period January to May 2016 (166k page views) than for the same dates in 2015 (115k page views). These broad quantitative analytics alone cannot however address whether our webcomics, rather than other interest surrounding the exhibition and films, drove an increase in the number or demographic range of visitors. A quantitative answer to that question would require a level of behavioural tracking beyond our abilities as ethical researchers, to address individual readers' engagement with the webcomics and the Bell archive both within a given visit to the website and beyond, to account for individuals' web browsing behaviour across multiple sessions and devices. As such the targeted qualitative evidence we present in this paper offers insights into the experiences of readers of our webcomics who had not previously accessed the Bell archive, prioritising readers' reports of their experience over numerical data on web clicks. We do however note that it may yet be possible to explore more detailed quantitative analytics tracking per hotspot, with the appropriate ethical and GDPR legal considerations, and retain a focus on readers' experiences.

Qualitative evidence is seen in YAC members' comments, and more widely from the crossover of reasons for reading the webcomics including technology-focussed comics reviewers with limited interest in Bell, and Bell fans with limited interest in webcomics. Taken together, these findings suggest not only that webcomics can be an effective way of presenting information, but that our technological innovation in the use of hotspots to incorporate source material can attract and hold the interest of non-specialist readers. This indicates potential to further explore the affordances of how innovations in webcomics can support both a general interest reading of historical narrative by non-specialists, and a deeper understanding of why and how to use archival sources as part of that narrative.

In exploring these possibilities it is essential to remain focussed on the politics of access to archives and skills. Our earlier overview of TNA (2009) guidance showed that even digitised archives available online might struggle to engage non-specialist readers beyond a core academic audience; moreover, Taylor and Gibson (2017) have begun to address questions of power in digital access and claims to democratisation of heritage. Existing uses of comics in archaeological engagement suggest potential for the further use of comics, and combining this with a web environment that affords direct links to that digitised archive could take this further still in supporting learning. In considering the specifics of what webcomics can offer archives engagement, we refer back to TNA policy guidance on ‘Removing the invisibility cloak – making archival material more accessible’ (TNA 2009, 13). Our earlier illustration of showing both the absence and presence of stolen goods now becomes a visual metaphor: the goods are there, but can you see them? The archival content is freely available online, but can you read it? Our use of narrative presented as a webcomic explores ways of supporting non-specialist readers who might formerly have felt excluded to find meaningful hooks into Bell’s work, which then offers points of entry to long-standing political issues including empire, self-governance, and the conservation of antiquities. Intertwined with this is the role archives and academic research play in conserving and interpreting artefacts as part of the process of curating histories, both through Bell’s own work as an archaeologist and curator and the subsequent history of her archive.

Quantitative data shows that our Bell comics have indeed been read around the world, and both YAC feedback sessions and qualitative data suggest that these Bell comics were well-received. It is unsurprising that readers’ responses varied, and encouraging that on balance their feedback is favourable. Verbatim feedback included the recall of specific information, and some indications of engagement with the complexity of Bell’s work. We have prioritised YAC’s comments, as feedback from a defined purposive sample of young people with a

general interest in archaeology, over anonymous online feedback. Our choices of relatively unobtrusive approaches to data collection succeeded in gathering meaningful insights into readers' responses to the comics as an indication of their efficacy in supporting engagement with information about Bell and with the digitised archive. These however gathered only slight glimpses of readers' motivations in accessing the comic, or how they connected this with their views on either the history of British interventions in the Middle East or contemporary issues of sovereignty, politics, and conflict.

The use of hyperlinked hotspots to digitised archive materials was either commented on favourably by YAC and other readers or not mentioned at all: there were no explicitly negative comments about this. Indeed, the opportunity to be involved in a technology-based archives project was met with enthusiasm by YAC members. With particular reflection on YAC members' observed behaviour in using the website, our attention turns to the need for additional prompts for more structured exploration of Bell's archive. There is a risk that without sufficient contextual information, non-specialist readers might come to conclusions that are not substantiated by (archival) research on Bell. This has unfortunately been the case with films based on Bell's life: it is unfortunate that Herzog's *Queen of the Desert* (2015) was so poorly researched. That missed opportunity may have contributed to a film that was roundly criticised as 'soppy and ploddingly dull' (O'Sullivan 2017), in contrast with plaudits for the archive-rich documentary film *Letters from Baghdad* (2017) produced by Zeva Oelbaum and Sabine Krayenbühl. Though it would be optimistic to claim that meticulously researched media is a sure route to critical and commercial success, there is a demonstrable need for rigorous archive-based content that models and trains non-specialists to look for the evidence behind a story. Hyperlinked webcomics show signs of meeting this need.

Following this successful initial phase to our project we identify two next steps for our work. First, the translation of the existing webcomics into Modern Standard Arabic and Turkish, to

make these more accessible to more readers. This requires attention to the reading order of text embedded as an image within each panel of the comic, reversing the reading order of each full page (right to left for Arabic, rather than left to right for English and Turkish), and is already addressing key issues of cultural and political sensitivity. Second, the development of additional prompts to support readers to engage further with the digitised archive. Those prompts might include questions and tasks for individual readers, groups of readers, or educators who will use the comics with groups, with scope to explore how far the digitised archive sources can become more integrated part of the narrative. There is an opportunity to build a body of resources targeted at students who wish to use the archive for project work. Our next step in the UK educational context will focus on A-level students undertaking an Extended Project Qualification (EPQ), to support individual students' independent study for their own development and also use this to attract teachers' attention to the wider potential uses of the Bell archive in and beyond the UK National Curriculum.

Our exploratory project has succeeded in creating hyperlinked webcomics that support readers' engagement with the digitised Gertrude Bell Archive and has gathered largely positive evidence on the use of those comics. As such it exemplifies innovation not only in creating digital comics that use the dynamic web environment, but in harnessing the affordances of that web environment to make the use of archival sources explicit in contextualised and accessible ways. It advances new ways to support young people's access to, exploration of, and ultimately learning from digitised archives. This moves beyond the established role of archives as a resource for academic researchers through advancing the practice of supporting young people's engagement with archival materials. Given the particular complexities of the Gertrude Bell Archive, we see this technological advancement in parallel with a continued engagement with critical questions surrounding the archive's

content, and indeed the principle and practice of widening access to digitised archival materials.

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List of tables

Table 1: Website visitors by country

Table 2: Website visitors by language

List of figures with captions

Figure 1 Comparison of draft (left) and final (right) comics representations of Bell’s time at university (both © John Miers and the Gertrude Bell comics project)

Figure 2 Comparison of the church on the summit of the Kara Dagh (Karadağ) in the webcomic (left, © John Miers and the Gertrude Bell comics project) and in Bell’s photograph (right, © The Gertrude Bell Archive, Newcastle University)

Figure 3 Ramsay and Bell’s field drawing of the Neo-Hittite (Luwian) hieroglyphic inscription (© Ramsay and Bell 1909, originally published as figure 376 on page 515 of *The Thousand and One Churches*)

Figure 4 Comics panel showing the presence and absence of stolen property (© John Miers and the Gertrude Bell comics project)

Figure 5 transcribed letter in digitised archive (© The Gertrude Bell Archive, Newcastle University, available online http://www.gerty.ncl.ac.uk/letter_details.php?letter_id=1048)

Figure 6 Chapter 3, panel outline added for emphasis (© John Miers and the Gertrude Bell comics project)