

Methodological reflections on tracing networked images

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Structured Abstract

Purpose

Many scholars highlight a need for reflexive methodological accounts to support visual research. Therefore, this paper offers detailed reflection on the methods involved in tracing and analysing 248 commercial images of entrepreneurship. This account supports our published work examining entrepreneurial masculinities and femininities, which conceptualised the gendering of entrepreneurial aesthetics, and proposed the significance of image networks in the reproduction of neoliberal ideals.

Design/Methodology/Approach

Now based on further methodological reflexivity we offer insights on both the possibilities and challenges of tracing networked images by reviewing four methodological complexities: reflexive engagement with online images; working with and across platforms; tracing as a potentially never-ending process; and montage approaches to analysis.

Findings

Our account focuses on a specific form of imagery – commercial images – on a certain representation – the gendered entrepreneur – and on a particular complex site of encounter – online. This work mapped a visual repertoire of gendered entrepreneurship online by tracing visual constructions of entrepreneurial masculinity and femininity. In this paper we open the methodological ‘black box’ of our study and explain our belief that methodological advances can only be built through exposing our working practice.

Originality

Through our detailed reflective account we aim to open discussions to aid development and use of complex visual methods online.

Introduction

We are now seeing considerable methodologically innovative work across organization and management studies (e.g. Price and Hartt, 2023; Marcolin *et al.*, 2023) much of which centres researcher experience and reflexivity (e.g. Mavin, 2022). Relatedly we see a steady rise in work engaging with imagery in various forms (Li *et al.*, 2019; Drenten *et al.*, 2020; Swan, 2017), within multimodal contexts (Smolović Jones *et al.*, 2021; Suskind, 2023) and by those exploring how images facilitate writing differently (Gottardello, 2023). Yet within most journal publications space for methodological explication and discussion is limited. Therefore, this reflexive methodological account extends and develops the presentation of our approach in our recent publication (Pritchard *et al.*, 2022). This work mapped a visual repertoire of gendered entrepreneurship online by tracing visual constructions of entrepreneurial masculinity and femininity. The term ‘trace’ highlights the sometimes tenuous and almost elusive connection between research activities and the online visual contexts explored (Pritchard, 2023). This notion of tracing also resonates with encouragement to qualitative researchers to consider and unpack their research experiences reflexively; to trace their own activities (Bolade-Ogunfodun *et al.*, 2023; Zhao, 2024).

Of course, this does not negate that there are many excellent methodological resources on visual analysis, including but not limited to Rose (2016) and Pauwels and Mannay (2019). This paper does not attempt to offer a complete overview of visual methodology or its theoretical basis (see for example Baldessarelli *et al.*, 2022; Boxenbaum *et al.*, 2018; Quattrone *et al.*, 2021). Rather, as Shortt and Warren (2019) note, there is a lack of reflexive narratives that detail specific analytic undertakings. Such narratives provide useful resources for others to extend and develop their own research. Particularly for visual research this is sorely needed considering the sheer quantity of imagery encountered daily in relation to organizations and work. Our account focuses on a specific form of this imagery – commercial images – on a certain representation – the gendered entrepreneur – and on a particular complex site of encounter – online.

Entrepreneurship, and the construction of ‘the entrepreneur’, is an opportune context for visual scholars to explore. Images permeate online spaces and are a constant presence across the wider political economy (Pritchard *et al.*, 2022). The method set out here involved tracing and analysing 248 commercial images online to understand how gender assumptions visually reproduce normative entrepreneurial actors. This highlights the significance of examining connected networks of images via ‘tracing’ images across multiple sites. The detailed reflexive account which follows aims to generate insights and possibilities for other scholars applying complex visual methods in their own research.

Our paper first introduces theories of visual representations before outlining why tracing images might be both conceptually and methodologically important. Next the research approach is explained. We then reflexively unpack four significant methodological complexities, before discussing insights on the challenges and possibilities of online empirical research with visual images.

Theorising visual representations online

Visual theory, particularly that pertaining to visual repertoires (Machin and van Leeuwen, 2016; van Leeuwen, 2005), emphasizes the importance of mapping image catalogues to further understand their role in processes of social construction (Aiello and Parry, 2019; Rose, 2016). There has been much methodological debate surrounding linguistic repertoires in various forms, particularly discursive. However,

there has been much less attention towards mapping overarching visual representations (Pritchard, 2020). Such work requires the analysis of multiple – as opposed to single – images that represent a particular phenomenon, like entrepreneurship. Further, despite work highlighting the importance of generic or stock images and wider catalogues of commercial images (Aiello *et al.*, 2023; Thurlow *et al.*, 2020) in organization studies, visual research has mainly focused on participant generated images (Shortt and Warren, 2019) alongside celebrity and press representations in traditional print media (Stead and Elliott, 2019). Further attention to commercial imagery is then necessary particularly considering this is arguably dominated by the stock image industry that generates approximately four billion dollars annually (Attie, 2023).

Commercial images are often photographs but can be graphics, cartoons or combinations of visual elements (Pritchard *et al.*, 2022). Across different image forms, commercial representations deploy a variety of compositional devices with the aim of conveying a particular activity, relationship, mood, etc. (Machin, 2004). These images thus offer visual cues which ‘enable the viewer to translate the composition appropriately for the subject matter for which it is used’ (here, entrepreneurship) (Pritchard *et al.*, 2022, p. 1783). Images are regarded as significant ‘cultural text[s]’ (Milestone and Meyer, 2012, p. 3) since ‘we gradually come to accept them as showing us how the world really is’ (Machin and van Leeuwen, 2007, p. 157).

Stock images are particularly pervasive online; in recent years there has been a dramatic increase in the volume of these images circulating online with some 350 million stock images in current use (Aiello and Parry, 2019; Machin, 2004; Thurlow *et al.*, 2020). Moreover, commercial images are not only found across a huge range of news and other media outlets (Aiello *et al.*, 2023) but ‘unofficial use has spread across a range of different web spaces from individual blogs to corporate websites’ (Pritchard, *et al.*, 2022, p. 1783). Consequently, commercial images are now central to contemporary aesthetic capitalism (Banet-Weiser, 2018). This forms part of a system which monetizes aesthetic ideals, the value of which is reinforced even when they are uploaded without payment for image rights. As Frosh commented these visuals are part of the ‘ambient image environment’ which should be considered as ‘ongoing habituation’ (2020, p. 193). In this way the value of imagery spreads beyond a specific

instance or a particular use and shapes our understandings of aesthetic norms for subjects such as the entrepreneur (Baker and Walsh, 2018; Elias *et al.*, 2017; Johnsen and Sørensen, 2017).

As highlighted above, there has been less analytic attention towards these forms of imagery in relation to representations of entrepreneurship. Nevertheless, given the iconic status of the entrepreneur as a contemporary neoliberal success story (Sussan and Acs, 2017), understanding the impact of this ‘ambient image environment’ (Frosh, 2020, p. 193) is essential. This might have been sufficient rationale for our research project, but we were further motivated to develop our methodological work (Pritchard, 2020), to engage more fully with Rose’s suggestion to attend to ‘sites of circulation’ (2016, p. 34) to develop understandings of networks of images (Hand, 2017). This paper further progresses these ideas, extends our previous methodological thinking on commercial images (Pritchard, 2020) and reflects on our engagement with tracing images. As images permeate online spaces and are a constant presence across the wider political economy beyond entrepreneurship, the methodological ideas about tracing images unpacked here offer many possibilities for researchers beyond this particular focus.

Tracing images as conceptually significant

Contemporary research interest in online images draws on a long history exploring how visual imagery within various media impacts our access to, and shapes our understanding of, organization in the broadest sense (Aiello and Parry, 2019; Machin 2004; Rose, 2016; van Leeuwen, 2005). These investigations reject images as being portrayals that ‘represent’ reality or as ‘windows’ on the world (Meyer *et al.*, 2013, p. 494). This reflects our position that ‘images are implicated within processes of social construction both through what is displayed and that which remains out of sight’ (Pritchard, 2020, p. 298).

Methodologically, online images are generally ‘found’ by the researcher via various means. For example, both Swan’s in-depth (and multimodal) analysis of ‘post-feminist stylistics’ (2017, p. 286) of a women entrepreneur’s website and Duffy and Hund’s (2015) review of ‘feminine’ (their term) fashion bloggers self-presentation on Instagram consider images that are already available online. These are just two examples of a

growing area of research, particularly in relation to participant generated images of entrepreneurship and enterprise (Alexandersson and Kalonaityte, 2021; Smith, 2014). In general, such research focuses on analysing images that have definite links with specific contexts, including links generated via social media hashtags. Within this work, online images have been viewed as bound to the online context in which they were found and are then analysed in respect of their visual effect interpreted from this context (Meyer *et al.*, 2013). Research questions thus interrogate the effects of image usage, to understand how presentations of visual (and sometimes accompanying textual) elements are curated for a specific effect on a particular audience. This is of course an interesting and useful line of enquiry but is quite different from our own aim of tracing images across multiple online spaces to map visual repertoires.

Research focusing on fixed relations between image and context carries forward an assumption inherited from the history of print media. This fixidity is emphasized in Meyer *et al.*'s (2013) label of 'archaeological' research, describing a focus on "pre-existing" visual artifacts and data that the researcher can collect and interpret to reconstruct underlying meaning structures' (2013, p. 504). To us, this archaeological metaphor suggests that images are buried, waiting to be unearthed through the research process. By way of contrast, the fluidity of multi-platform online environments (Aiello and Parry, 2019), which include social media sites such as TikTok and Instagram (Zhao, 2024), sits in tension with notions of the image being bound to a specific context, waiting for us to dig it up.

It has been long recognized that images are not straightforward representations of some external reality, but are themselves bound up in, and become present through processes of social construction. Nevertheless, within research undertakings visual representations have often remained ontologically and epistemologically bounded, often to specific sites of interpretation. In contrast when conceptualising tracing images, online contexts are treated as dynamic, comprising unstable webs of constantly shifting algorithms. In some online contexts, particularly social media, images can be continually remade often in relation to an ongoing theme (for example Pilipets, 2019 and Cervi and Divon, 2023 on meme circulation). In these contexts, while images themselves appear more fluid, they are often anchored in some way thematically (e.g. through hashtag usage).

However in other online contexts (such as those explored in our research), there may be less visual remixing and far more contextual fluidity as any thematic focus dissipates across the wide range of use. Excitingly, images might then transcend time and space; they are no longer anchored to events, meanings, audiences or contexts. Taking a similar view, in recent work (on automated vehicles) Wigley and Rose (2020) noted that the extensive circulation of images online means that 'the idea that these images are targeted at any specific audience is difficult to sustain. Rather it might be more accurate to suggest these images circulate to create positive feelings about technological innovation' (p. 156). Rose has theorized this further in proposing that in addition to researching sites of image and audience, researchers should attend to 'sites of circulation' (2016, p. 34). As introduced previously, this highlights that examining online commercial imagery requires understanding not only specific contextual fixed instances of image use, but considering the ways in which we might trace images across and through the online environment (Frosh, 2020).

While some research has interrogated commercial images at source, investigating image banks and libraries (Aiello *et al.*, 2023; Zieba, 2023), there has been less research that has followed or traced use online. As Wigley and Rose (2020) found by following accounts on social media, while use of commercial imagery was once restricted to those with significant budgets, digital images are now easily accessed via search engines, tagged for free use or used without authorization. This research is part of a small but significant corpus which draws attention to the 'ephemeral' and 'transient' nature of contemporary visual data (Bainoitti, 2021, p. 3656). Conceptually then rather than searching for images of entrepreneurs embedded in specific online sites, this research (Pritchard *et al.*, 2022) aimed to trace how understandings of the entrepreneur are continually reproduced through image circulation (Rose, 2016). Thus, we trace connected networks of images across a dynamic visual environment (Frosh, 2020), arguing that these reinforce entrepreneurial ideology across the wider political economy (Bergeron, 2001). Having provided this background on the conceptual importance of tracing images, next we discuss the methodological complexities.

Methodological complexities encountered tracing images

Despite increasing discussion of online images, and recognition of the fluidity of online environments (Aiello and Parry, 2019), there is limited methodological discussion or guidance for researchers seeking to investigate such issues (Pritchard, 2020). Perhaps unsurprisingly, there is much debate on the use of technology, AI, and of big data methods, as the most appropriate way of approaching visual research online (Rogers, 2021; Sivarajah *et al.*, 2017). There is no doubt that big data and the associated technologically facilitated analytics are here to stay. However, as qualitative researchers, we felt it was important to examine alternative possibilities, and particularly those which enabled keeping images analytically central. This section reviews the overall methodological complexities of tracing images and then later, after explicating our research approach, we return to discuss specific challenges (reflexive engagement with online images; working with and across platforms; tracing as a potentially never-ending process; montage approaches to analysis) in detail.

It is important to first understand how tracing images might be accomplished and then examine our roles as researchers within this process. From a qualitative methodological perspective, it is often suggested that an adaptation of an ethnographic approach might be utilized online (Hine, 2005; Kozinets and Gambetti, 2020). Pink (2012) refers to visual ethnography online as 'moving in the visual landscapes of a web 2.0 world' (p. 112) while Larsen (2008) discusses flows of tourist photographs, tracing movement from the original photograph to how this is shared online. These works involve participants directly in examining how they engage with and view these images. Therefore there is perhaps limited opportunity to apply these ethnographically inspired methods to our focus on commercial imagery across a range of image environments (Aiello and Parry, 2019; Frosh, 2020). Yet, we see some similarity in how we describe tracing as both a process of following images, and as a means of crafting data, a similarity we reflect on later. It is important to acknowledge reflexively that tracing was negotiated individually and collectively by us as researchers, as we are embedded within our own research practice and not separate from it. As Sergi and Bonneau (2021) note, visual research is an 'affective experience' (p. 319), and this is the first methodological complexity unpacked later in our paper.

Secondly, the technological influences that shape the research process required consideration. Methodologically, our focus on tracing images aims to identify where

the same image appears across multiple sites, and the types of use across the internet. While visual ethnography usually establishes a base in a specific user community, for those researching more broadly online there are a huge variety of avenues to explore. Most of these are technologically mediated, relying either on a specific platform or practice (such as the use of hashtags). Thus, the sociomaterial mediation of our research requires attention. Most consideration has been given to the issues of the largely hidden power of platforms and algorithms shaping our research process (as they do many other aspects of our lives).

Thirdly, while exploring technological navigation of online images is a significant issue, the scope and spread of the research endeavour is another important complexity. As Emmison *et al.* (2012) highlighted, using online images offers significant advantages (the wide range and vast quantity of accessible images) but also raises the danger of overload for the qualitative researcher. Since it is impossible to trace everything, how can we limit a project so that it is manageable, but still able to contribute to our areas of study (Hand, 2017)?

The fourth and final complexity addresses the challenge of keeping the image(s) as the central analytic focus throughout the research project. Big data and AI research approaches usually involve the transfer of the visual to some other data form for analysis, while this also occurs in qualitative approaches in which lexical themes or codes are utilized. Here our focus on the visual is maintained by actively working with image montages rather than converting images to textual or numerical representations. Montage refers to the making of patchworks or galleries as images are continually sorted and resorted during the analysis process (Smith, 2021), as described in a later section.

Before unpacking more detail on specific methodological challenges later in our paper the research process is described, and the analytic approach outlined.

Our research approach

It began with coffee, or it might have been tea, but it began informally. The research team (of three) initially just searched online for images of entrepreneurs, then together discussed similarities and differences between the images we found. Indeed, we first

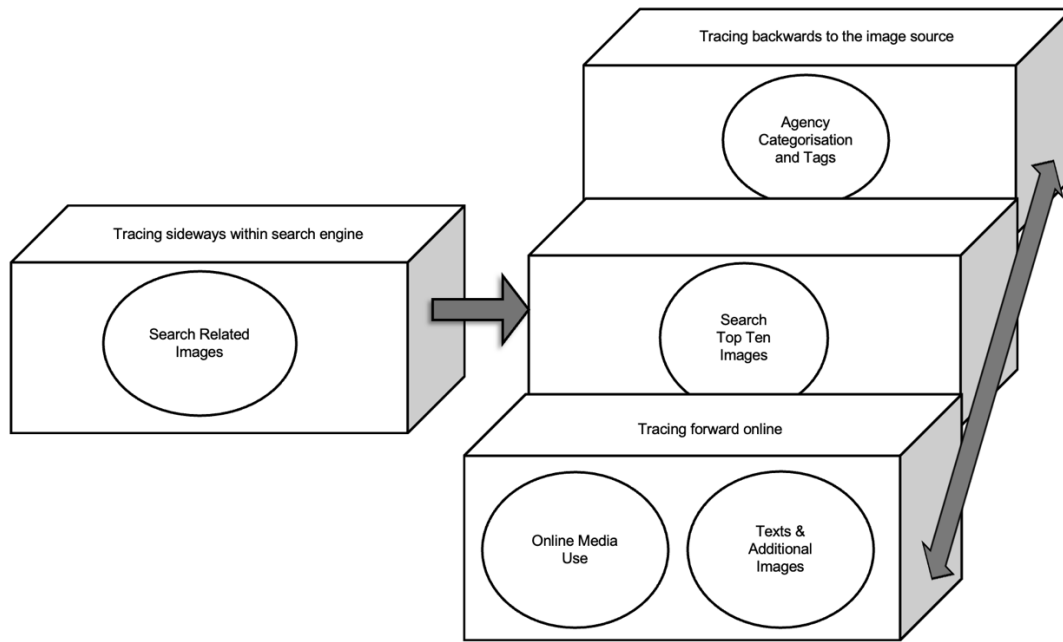
considered tracing images of just women entrepreneurs before extending our scope to enable us to unpack entrepreneurial masculinities and femininities. At this point a more structured exploration began. As set out in Figure 1 and Table 1, this began with a Google image search to identify 'the top' or 'most popular' images. From this starting point, these images were then traced across three different online spaces that offered a good basis for investigation: the search engine space itself, tracing through to where these images were posted online, and finally tracing backwards to identify the origin of the images themselves. This is an adaptation of a recognized visual analytic approach which is often referred to as top slicing (Aiello *et al.*, 2023; Pritchard, 2020; Rogers, 2021). In a top slicing approach, popular images are selected from search engines and then the dataset is extended via a reverse image search to source further material for analysis (Pelkey, 2020; Pritchard, 2023).

Google image search was used to obtain and trace images as it remains the most popular search engine for visuals (Rogers, 2021). This popularity was also important as it ensured that the images identified were then going to be traceable, since they were likely to be widely seen and used. We acknowledge (and below reflect on) the challenges of working with and across platforms, and recognize our research was shaped by Google's algorithmic processes. Different variations of search terms were tested to assess the impact on the images displayed, particularly in relation to image type (graphic, commercial, celebrity etc). As a result, two parallel searches were conducted to first identify and collect images of 'female entrepreneurs' and then images of 'male entrepreneurs': using these as the search terms. This reflects the dominance of the sex and gender binary which remains pervasive across most online spaces (Banet-Weiser, 2018). The terms female and male are frequently used interchangeably with women and men; and often appear with the term entrepreneur as this scans well. For example, Forbes (and specifically Forbes Women) features extensive use of the term 'female entrepreneur' (and female founder) but uses 'businesswomen' in a broader context of working women. Despite the binary way in which sex and gender are presented in these sources, our analytic work (Pritchard *et al.*, 2022) engages with the complex ways that entrepreneurial masculinities and femininities are visually constructed and the significance of these constructions for contemporary understandings of entrepreneurship.

After conducting searches, the next step was to identify which images to use as the starting point for tracing online. Following some further experimentation, the top ten images from both sets (female and male entrepreneurs) of search results were selected. This reflects the notion of 'top slicing' highlighted previously (Pelkey, 2020). From testing out this planned approach for tracing, it was clear this would generate a significant volume of data. Moreover, even when playing with tracing images at this stage, we were intrigued with the highly varied ways these images appeared to move online.

Institutional ethical approval was granted with an agreed protocol in place that was sensitive to the different digital spaces the research might lead, although it is difficult to fully anticipate these in advance. During a review of the top ten images, it was noted that two were of named (celebrity) women entrepreneurs. In accordance with the ethics approval, these images were removed from the subsequent stages of the research and not traced online. Therefore, the tracing process was completed for 18 rather than 20 images overall. In hindsight, these could have been substituted with the next two popular images in the search results. Similarly, later in the tracing process, as images of named or known entrepreneurs were encountered, they were also excluded from the analysis. Further research could usefully trace celebrity or named images as a potential extension of this project. Although it is interesting to note that we found relatively little use of celebrity images alongside the commercial images traced; perhaps because both the costs of securing such images and the potential risks of misuse (without copyright etc.) are much higher than for more anonymous and generic images.

Figure 1: Summary of Tracing Process



(Source: Authors own work)

As shown above (Figure 1) and explained earlier, three distinct tracing moves were investigated: sideways; backwards; and forwards. Here, we note the illusion of linearity within the practice of tracing, and how such notions hide the complex, and at times chaotic, ways in which engagement with images across unknown online spaces materializes. These moves highlight that tracing becomes methodologically defined through the research process rather than existing as a pre-configured definition. The 'sideways' move was within the image search site and identified related images suggested by Google. Due to the ways in which these related images were presented on screen (highlighted and shown together in a window), the first 12 related images were collected as part of this sideways tracing. Having excluded two named celebrity entrepreneurs from the female 'top ten'; this provided a total of 216 related images. Removing duplicates from these data resulted in 145 images for visual analysis.

In the representation of tracing (Figure 1), the 'backwards' move is simplified to show stock libraries as the source given this was the case for most of the top images (7/8 of those of women and 8/10 of those of men). These were traced either through a focused reverse image search, or by collecting the stock reference number from the image properties on the sites of use. For the remaining images, a more extensive

reverse image search – using Google – was conducted to trace the source, which were identified as other types of commercial imagery (including fashion). Both these processes used the ‘search by image’ option within Google and then process of analysis (also using information found on copyright or other reference information) to trace to the original source image. It is worth highlighting that data collected during this backward tracing has yet to be utilized in our analytic project.

The ‘forward’ search process traced the top ten images of male and female entrepreneurs across the different online sites. At this point the sheer volume and range of data was initially overwhelming. A first cut was made to exclude ‘light hits’ which did not provide sources that could be analysed as part of this project. Those excluded were: links back to a stock image bank, use on social media profiles (usually as an avatar), results not in English, results where the picture was not evident, duplicate hits to results already downloaded, pages not found and/or warnings of malicious content. From this process a list was collated of 238 potential online spaces to explore further. Suffice it to say these images were spread far and wide! We also noted that much (if not most) image use did not seem to be compliant with copyright or terms of purchased commercial imagery, especially with typical stock image library terms and conditions. Outside of what might be termed ‘mainstream online media’ (Forbes, Huffpost, etc.) often there was no credit given, and source details were sometimes obscured.

Given the analytic focus of our investigation, these spaces were narrowed down to those related to entrepreneurship, resulting in a more manageable 86 online sources for detailed analysis. The original traced image was often the only visual used (60 out of the 86 online sources collected), while a further 85 additional images were downloaded from the remaining 26 sites. This apparent divergence between image-rich and image-sparse sources has not yet been fully explored but will be part of our ongoing work. Overall, the main data set of 248 images comprised: 18 top images, 145 related, and 85 additional images, with duplicates removed (Pritchard, *et al.*, 2022).

Following this overview, Table 1 (below) provides more detail on the key activities within this tracing research process. Note that previously, the first author had used

NVivo and associated plug-ins for downloading web data but this had caused technical issues (the PC kept crashing). Thus, we shifted to using Microsoft software tools and a PC that was not in regular use by any of the authors at the time during these data collection processes.

Table 1: Research Approach

Key activities	Key experiences
Step 1: Design image search and trace protocol	
Identify search platform Identify image search process Test and pilot search terms Map and pilot planned tracing process	Experience from Pritchard (2020) came in very useful here, although Google Image search processes had been updated and some adjustment was needed. Searches were performed on a device that was available to us but was not being actively used (including by any of the authors), did not connect to a Google account and cleared browser history before and between searches.
Step 2: Identify images to trace	
Conduct image search Select images Download jpeg Collect metadata for each image	An Excel log was used to record information on each image.
Step 3: Trace images across each of the three spaces	
<p>Step 3.1 Use image information to identify source where possible Use information to obtain source details Log relevant information (tags, descriptions, codes etc)</p> <p>Step 3.2 (repeated x 18) Collect related images from within search site Download jpegs Collect metadata for each image</p> <p>Step 3.3 (repeated x 18) Clear browser and search history Check virus protection and security settings Upload jpeg into image search engine Review results Screenshot and download text and additional images from each viable link (see below) Log viable links Log excluded links and rationale</p>	<p>A PowerPoint file was created for each image which included links and notes regarding source information.</p> <p>These were downloaded and added to each of the above PowerPoint files with the Excel log summary updated as needed.</p> <p>A document was produced for each traced image which logged all details of both excluded and viable links. All text and images were downloaded for each viable link. A spreadsheet tracked the overall numbers across these stages. We have noted some different patterns in image use – particularly single vs multiple images and other patterns</p>

Repeat	which will need further exploration as part of our wider research project.
Step 4: Data organization and refinement	
Review of data collection Check log of all data sources Researcher moderation of data link to topic Data log refined to topic focus Review images for named individuals (ethics) Organize data storage and update log	A lengthy and iterative process! The critical decision was how to delineate our focus on entrepreneurship. The discussion around named individuals required advice from our ethics committee, although we noted that there were very few images of named individuals after the top ten search images.
Step 5: Detailed analytic design	
Researcher overview of data set Discussion of research question, focus and papers Analysis plan produced	This is where having a research collaboration really helped. We played with the data set and explored different options before setting out analytic paths.
Step 6: Visual Analysis as per Pritchard <i>et al.</i>, 2022	
An iterative process that was based on Pritchard (2020) but further involved: Step 6.1: The detailed portrait analysis of top images Step 6.2: The creation of six digital montages that mapped composition and visual features across different search combinations Step 6.3: The thematic and semiotic analysis of visual features and themes – entrepreneurial appearances, (in)action and interaction – each involving iteration via more montages and unpacking through analytic interrogation	Again, this was a collaborative and iterative process in which we moved back and forth through these different analytic modes as we built a research story. We explored many different threads here, not all of which have appeared in the final paper. We particularly struggled with how to present the tracing across these different data, ending up with various table formats as including in our final publication (Pritchard <i>et al.</i> , 2022, see Table 3 for example)
Step 7: Paper write up	
Paper drafted and visuals summarised Reviewed collaboratively many times Submitted to journal Responded to reviewers' comments and resubmit	We experienced a helpful editorial and review process, though this focused on the analytic content of our paper rather than the methodological challenge.
Step 8: Methodological Reflexivity	
This paper!	This paper is the first part of a review process of our methodological journey.

This summary (Table 1) offers a rather structured view of our approach, so below the methodological complexities are examined in more detail.

Specific methodological challenges of tracing images

As discussed earlier, there were several challenges that we encountered in the process of tracing images. These methodological complexities are not unique to tracing images and many may be familiar, particularly to other visual researchers:

- Reflexive engagement with online images
- Working with and across platforms
- Tracing as a potentially never-ending process
- Montage approaches to analysis

Reflexive engagement with online images

From our first glance at the images, we were hooked. Who were these fabulously shiny, happy people? What were their enterprises? And how did they get their hair like that? As images were traced, we got more excited, especially by some of the strange and (to be honest) slightly disturbing places these images appeared. Could an image represent an entrepreneur and yet also appear on a site offering tips for how to have a trouble-free hook-up in a European country? How come a law firm that we could see only employed middle-aged white men (from their staff page) used an image of a young black woman on their 'about us' page? Narrowing our focus was difficult, we became particularly attached to some of these images and felt like we knew these people.

It is important to acknowledge that we are all white, Westernised ciswomen and diverse at the intersecting levels of identity (e.g., age, sexuality). It is also relevant that we all experienced some challenges through the period of this research, not least associated with the pandemic but also other significant life events. Often, our collaboration provided some relief from these more stressful events and the images became symbolic in various ways. Moreover, the visual analysis was approached with a critical orientation to these representations of both men and women; and of entrepreneurship more broadly. As scholars engaging with the research topic from a critical orientation, we join a growing body of scholars questioning and challenging fundamental assumptions that underpin and perpetuate an accepted construct, like the entrepreneur (Duffy and Hund, 2015). Researchers at a different time, with a different sensibility and a less critical orientation may well have told a different story or

reached different conclusions regarding these representations. This is often highlighted as one of the challenges of presenting visual research for publications and is a complexity that we consider here. We see this reflexivity as fundamental to the research process, rather than assuming it is something to avoid or side-step in pursuit of an illusory objectivity (Bolade-Ogunfodun *et al.*, 2023).

Working with and across platforms

The term 'platformization' is used to denote the increasing (and increasingly opaque) control of our digital landscape by a few powerful technology firms and the more specific (and still opaque) means of operation of these platforms (Pearce *et al.*, 2020). Our use of Google and tracing across online sites seemed to offer 'natural' routes for exploration. How other possibilities are hidden and obscured from our view; sometimes because of the ways we used the technology and at other times due to the technology itself. There is a risk that revelling in the data curated, means we do not pay sufficient attention to how platforms shape research and the wider experience of the visual online. Methodologically however it is not possible to step outside algorithmic influence when working on the web – no matter how much we try. For example, even incognito or private search modes which protect search results on a particular device or account, are still subject to search algorithms which can impact subsequent activity. Indeed, researchers navigate online gatekeepers in the same ways as others use these image search processes for a whole range of purposes.

Those engaging in online research increasingly recognize the importance of acknowledging this contextualisation as a part of their methodological audit trail, a complexity we highlight here. Perhaps because we associate algorithms with quantitative studies, AI and big data more broadly, qualitative researchers might sometimes shy away from unpacking this contextual issue. Algorithms more widely are often black boxed, and researchers increasingly call for more analytic attention to these complex processes (Cellard, 2022; Gritsenko *et al.*, 2022), something visual researchers have yet to fully engage in (Chen *et al.*, 2023). Just as in a 'traditional' qualitative interview study or ethnography, research online can never be everywhere and attend to everything; algorithms and platforms play a considerable role in shaping where we go and what we attend to. We suggest that unpacking and reflecting on

these complex processes, rather than trying to thwart them, is important as qualitative researchers.

Tracing as a potentially never-ending process

As noted in our discussion of the research approach, the forward, sideways, and backwards tracing of images (summarised in Figure 1) are simplistic representations of the many different means by which images 'move' across, through, and in online spaces. We also acknowledge that for readability, our research process is presented as a relatively straightforward progression of linear steps, although this does not fully represent the repetitive, iterative, and circular nature of this - or most - projects. Within our conceptualisation of tracing, we suggest imagery online is dynamic, unstable and unpredictable. Thus, the fluidity of tracing presents a challenge as we seek to engage with this indeterminate domain.

However, we recognize the need to corral data into a manageable undertaking. We mentioned earlier that the initial process of capturing data took us far and wide; and our commitment to qualitative processes presented challenges in managing the volume of data. Our topic (gendered entrepreneurship) provided the means for focus, but in this narrowing we rendered invisible some aspects of image use. It was undoubtedly beneficial for this to be a collaborative project. This provided the basis for us to discuss, debate and share the decision making as we undertook our research. Through the process of writing and revising the paper, we revisited our data and our analysis many times, and even in a rather panicked moment, returned to and repeated the original searches to review the images. We were eager to continue the journey of following these images. There is something reassuringly static with other forms of data, it is deceptively reliable in its supposed fixity. Beyond the bounded repositories academic articles offer for qualitative data, these visual data, as we found in our subsequent tracing of them, continue to move well beyond our own engagements with them. Again, there are similarities to other forms of qualitative research here, since many qualitative investigations are inevitably open-ended; they offer part of the story but not the whole continually unfolding complex saga.

Montage approaches to analysis

In many qualitative visual analytic approaches, images become tagged or coded with words. In our research the image remains centre stage by using montage as an analytic tool, an approach that is rarely unpacked in empirical accounts. Indeed previously (see Pritchard, 2020) we had found it difficult to find guidance on montage approaches since most published accounts do not have space to unpack methodological detail (Feng and O'Halloran, 2012; Smith, 2021).

As we explain in our full paper (Pritchard *et al.*, 2022, p. 1784), 'montage refers to the making of patchworks or galleries as images are continually sorted and re-sorted during the analysis process' (Smith, 2021). Initially this is based on an overall visual impression but as analysis becomes more detailed, montages focus on specific features or bring together contrasting representations. Working directly with visual data either manually or digitally, montage provides a means for close interrogation either of entire images, or for montaging snippets of compositional features. We drew upon work on gaze (Aiello and Parry, 2019; Martínez, 2020) and gesture (Kendon, 2004) since these aspects seemed particularly pertinent to our lines of enquiry. However, this is a time-consuming process that is difficult to share across a research team, an experience that was made more challenging working remotely during Covid-19. We used digital montages, created in PowerPoint as a means of enabling collaborative yet distanced working. In a more extensive project, it may be that montage could be used alongside more traditional coding approaches, although this raises the issue of how tensions and discrepancies would be dealt with. This brings us to the additional complexity of multimodal research and how multiple qualitative methods can be brought to bear in published work. A challenge we will continue to grapple with as we develop our work.

Discussion and Conclusion

All authors face the challenge of squeezing methodological accounts into the space constraints of journal papers, this squeezing often results in research complexities being omitted and reflexivity confined to a few sentences. Therefore, we offer our reflexive methodological account to extend and develop the methodological presentation in a recent publication (Pritchard *et al.*, 2022). This strikes a balance between a clear explication of our approach and a reflexive consideration of the complexities we encountered. This recognizes the need to progress the discussion

(and hopefully encourage further use) of visual methods in gender and organization research, but also acknowledges that this is rapidly evolving. Our 'ambient image environment' (Frosh, 2020, p. 193) becomes ever more complex and implicated in the advance of contemporary aesthetic capitalism (Banet-Weiser, 2018) requiring more nuanced conceptual and empirical scrutiny. There are many further avenues to explore, whether that be tracing celebrity images, building tracing approaches into (auto)ethnographic or multimodal explorations or examining differences in image saturation in relation to gendering online. Our focus has been on commercial imagery online, but a related body of work has focused on image use, mixing and circulation across various social media platforms, with a particular focus on Instagram (Duffy and Hund, 2015) and, more recently, TikTok (Cervi and Divon, 2023). Moreover, emerging debates about the use of AI (Gorska and Jemielniak, 2023), and fakery (Wagner and Blewer, 2019) highlight the importance of extending our examination of contemporary contexts where our understandings of visual representation are being fundamentally challenged; there is clearly much more work to be done.

Our explanations offer further insight into the methods developed and used during this research, emphasising our experimentation at different stages of the project, presenting our approach as developmental and collaborative. We aim to have opened our methods black box and believe that methodological advances can only be built through exposing our working practice. This is important given the technological developments highlighted above and the potential application of tracing methodologies for other forms of online networked data. We also note that we as visual researchers also have much to learn from those investigating the ever-increasing range of online data forms beyond the visual.

As we observed above, reflexivity is fundamental to the research process, rather than something to avoid or side-step in pursuit of an illusory objectivity. Yet, reflecting on our reflections we also note how we have struggled with our own positioning; the extent to which Katrina, Helen and Maggie are present and how we are evident in our papers. How much about us could or should you know to understand the empirical and conceptual case we build across our work? For example, we offered an analysis of hair and grooming (Pritchard *et al.*, 2022), with a short acknowledgement of our view that many of the women's hairstyles seemed impractical while here offer more insight

as to our emotional responses to these images. Yet even here we refrain from sharing more personal details about ourselves. We acknowledge a willingness or ability to disclose, and the extent of this struggle, will be even more acutely felt for those with marginalized identities, precarious work contracts, or with otherwise complex circumstances. We therefore suggest a need to be cautious about expectations of reflexivity and that those of us in privileged positions that allow us to contemplate even a limited exposure are careful not to take this for granted. Such reflexive disclosure decisions are inherent to the often-curated ways we present ourselves within qualitative research in the pursuit of credibility, or somewhat paradoxically, transparency (Zhao, 2023). To some extent, our methodological conceptualisation of tracing is similar to the often-bounded ways we present reflexivity as a passive and somewhat linear process within articles. Tracing images – much like tracing our own identities - is messy, indeterminate and potentially never-ending; thus we – and the images traced - continue to be shaped beyond the bounds of the pages of this article.

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