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Computer-assisted qualitative visual analysis: Automating thematic analysis of images

ABSTRACT

The advent of advanced artificial intelligence (AI) and machine learning technologies has opened new avenues for qualitative research, particularly in visual data analysis. This pilot study introduced computer-assisted qualitative visual analysis (CQVA), leveraging GPT-4 Turbo and Google Cloud Vision to automate the thematic analysis of visual datasets. Traditional methods, relying on manual coding, are time-consuming and labour-intensive. CQVA addresses these challenges by providing an efficient, scalable and cost-effective alternative. This study had two objectives: developing the CQVA method and applying it to analyse the top 1000 advertisements from the 'adPorn' subreddit, offering insights into Reddit users' advertising preferences. A clear preference was identified for ads utilizing visual metaphors, as these were the most common. Additionally, the importance of engaging visual communication was underscored, with themes employing visually striking and easily comprehensible imagery being favoured by Reddit users. Despite its promise, CQVA required human intervention to guide AI outputs and validate clusters and themes. However, the findings demonstrated CQVA's potential to revolutionize qualitative visual analysis by significantly reducing time and cost, while maintaining the richness of insights typically achieved through manual

KEYWORDS

thematizing images
coding images
GPT-4
Reddit
advertisements
AI
advertising

methods, thus enabling more efficient and comprehensive analysis of large visual datasets, highlighting the method's scalability and practicality for future research.

INTRODUCTION

Recent advancements in artificial intelligence (AI) and machine learning (ML) has introduced new possibilities for qualitative research in the social sciences. As of March 2024, the image processing capabilities provided by the GPT-4 Turbo API may enable innovative methodologies for analysing large image datasets. Traditional approaches, such as content analysis and thematic analysis of visual data, have relied heavily on manual coding, which can be time-consuming and labour-intensive (Basit 2003). This pilot study aims to present a novel approach: computer-assisted qualitative visual analysis (CQVA). By leveraging AI and ML, CQVA seeks to automate the coding and clustering of extensive visual datasets, enhancing the efficiency and depth of qualitative visual analysis while maintaining the richness of insights typically gained through manual methods.

This pilot study has two objectives. The primary objective is to develop a CQVA method capable of processing and analysing a large set of visual data. This study applies CQVA as thematic analysis to a dataset comprising the top 1000 advertisements from the 'adPorn' subreddit, a community dedicated to showcasing user-submitted examples of exemplary advertisements. The thematic analysis of the advertisements forms the secondary objective. This test case offers a rich source of visual data and provides valuable insights into the advertising preferences of Reddit's user base, an increasingly influential demographic as one of the most visited websites globally (Semrush 2024).

STATE OF THE (SHIFTING) FIELD

The integration of AI into qualitative research is not without precedent. The use of ML on text for thematic coding and analysis has been commercially proven in research tools such as 'NVivo' (Lumivero 2024) and 'thematic' (Thematic Analysis Inc. 2024). However, applying ML or AI to visual data for qualitative contextual research remains largely underexplored due to past limitations of AI vision models. Even leading commercial models such as Google Cloud Vision (GCV) or Amazon Rekognition, which are adept at structured information extraction such as image annotations (also referred to as image labelling or tagging), lack the contextual understanding required for qualitative analysis. This has seen image processing algorithms often struggle to accurately translate low-level visual data into meaningful high-level concepts, a problem referred to as the 'semantic gap' by Chen and Chen (2017). The root of the problem is that these models have been limited by predefined labels and training data, which do not fully encompass the broad and nuanced meanings that humans can infer from images (Chen and Chen 2017).

Past research has attempted to address the semantic gap by supplementing GCV with additional information such as image metadata, user-generated content and external datasets to draw more nuanced understandings from images (Omena et al. 2021; Razis et al. 2020). However, the need for additional data limits the applicability of such methods, as this supplementary information may not always be available and could be incorrect or misleading. Additionally, these approaches require multiple layers of technical mediation,

1. which restricts their usability to those with advanced technical skills (Omena
2. et al. 2021).

3. The introduction of OpenAI's GPT-4 models represents a significant
4. advancement in this field. GPT-4 demonstrates strong multimodal abili-
5. ties, such as generating detailed image descriptions and identifying nuanced
6. concepts like humour within images, capabilities not typically observed in
7. previous models like GCV and Amazon Rekognition (Zhu et al. 2024). This
8. new capability mimics nuanced human understanding of visuals, offering the
9. potential to replace or assist human qualitative coding and theming of images
10. which this research explores.

11. Using AI in qualitative visual analysis is not merely technological deter-
12. minism; it has practical advantages stemming from replacing human effort in
13. coding and thematising work. The first advantage is efficiency and scalability.
14. Normally, multiple human coders are needed, each requiring significant time
15. to manually review and interpret data (Basit 2003; Dai et al. 2023). In contrast,
16. GPT-4 Turbo can perform these tasks through its API or batch processing
17. within a day for both small and large datasets. Second is cost. In the research-
18. ers' tests, GPT-4 Turbo cost between NZD 0.01 and NZD 0.05 per image to
19. analyse and code, depending on batch processing and prompt complexity,
20. which is orders of magnitude cheaper than employing human coders. Third
21. is consistency. Human coders may introduce variability, bias and subjectivity
22. into the coding process, especially when multiple coders are involved (Basit
23. 2003; Bazeley 2012; Lazar et al. 2017). Computer-assisted qualitative analysis
24. can mitigate these issues (Bazeley 2012). Fourth, GPT-4 can potentially handle
25. far more complex coding instructions than a human. This study tests this by
26. employing sixteen different concurrent coding and analysis tasks for each
27. image, which would likely be too time-consuming or confusing for a human
28. coder to manage.

30. **THEMATIC ANALYSIS**

31. Thematic analysis, as described in Braun and Clarke's (2006) seminal arti-
32. cle on the method, was used as a test bed for CQVA. In essence, 'thematic
33. analysis is a method for identifying, analysing and reporting patterns (themes)
34. within data' (Braun and Clarke 2006: 79). This specific method was selected as
35. it is flexible in terms of 'research question, sample size and constitution, data
36. collection method, and approaches to meaning generation' (Clarke and Braun
37. 2017: 297) and it can be applied across a range of theoretical and epistemo-
38. logical approaches (Braun and Clarke 2006; Clarke and Braun 2017). Also,
39. the method shares many core components with other qualitative methods as
40. thematizing or thematic coding can also be considered a generic qualitative
41. tool. Therefore, the application of CQVA explored by this research may also
42. apply to many other qualitative methods.

43. Braun and Clarke (2006) state that thematic analysis is conducted in six
44. steps. These are (1) familiarize oneself with the data, (2) generate the initial
45. codes, (3) search for themes, (4) review themes, (5) define and name the
46. themes and (6) produce a report. This research explored how CQVA could
47. enhance Steps 2 through 5, streamlining the process by automating initial
48. coding and assisting in the efficient identification, review and definition of
49. themes. Specifically, CQVA was used to rapidly tag visual data (Step 2), aid
50. in the clustering of similar data to suggest themes (Step 3) and then refine
51. these suggestions (Steps 4 and 5). As coding and clustering are the most
52.

time-consuming aspects of thematic analysis, the CQVA process has the potential to reduce the time needed for analysis, improve accuracy and provide additional information post-clustering to help describe the themes.

RESEARCH DESIGN

The steps conducted by this research and how they align with the first five steps of thematic analysis are outlined in Figure 1.

Data collection

Data were collected from an advertising subreddit called r/adPorn (<https://www.reddit.com/r/AdPorn/>) using Reddit’s API. Reddit used to promote itself as ‘the front page of the internet’ (Anderson 2015). Such a claim by Reddit could be dismissed as marketing hyperbole, but Reddit’s large user base and content aggregation system appears to support this claim. Reddit is the fourth most visited website in the United States and eighth globally (Semrush 2024). Reddit currently has 82 million active daily users, 100,000 active communities (called ‘subreddits’) dedicated to specific topics, and over 16 billion posts and comments (Reddit 2024a).

The subreddit r/adPorn was selected as it has existed for over ten years and focuses on sharing exemplary examples of predominantly still-image advertisements. The name ‘adPorn’ comes from dated and vulgar internet vernacular where positive adjectives such as ‘good’ or ‘appealing’ are substituted with ‘porn’. In this context, ‘ad porn’ means ‘good advertisements’. The top-scored posts from r/adPorn were requested using Reddit’s API, covering a period from 2 April 2011 (the inception of the subreddit) to 1 August 2022. The top 1000 individual posts and their associated metadata were returned. These data

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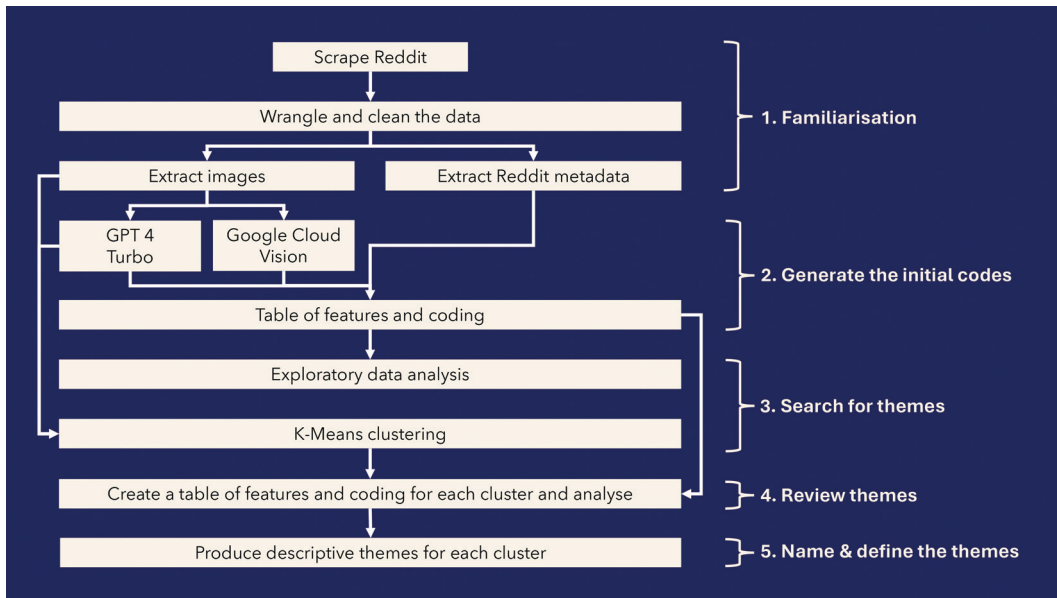


Figure 1: A diagram of the steps conducted by this research and how they align with thematic analysis.

1. were manually cleaned by removing broken links, posts with missing content
 2. and animated gifs (of which there were five), leaving 934 posts. Posts sharing
 3. the same image (reposts) were then removed, resulting in the final 866 posts
 4. used in this study.

5. Reddit allows for posts and comments to be accessed and down-
 6. loaded by anyone through their API (Reddit 2024b). The result is a wealth
 7. of community-generated and curated content that is focused by topic (i.e.
 8. subreddits), ranked by score (i.e. upvotes minus downvotes) and that which
 9. is accessible to anyone with an internet connection and some basic coding
 10. knowledge. This is a stark contrast to other social networks that seek to limit
 11. users' access to such data and why Reddit is an attractive data source for this
 12. research (Proferes et al. 2021). Understanding what advertising resonates with
 13. Reddit's user base offers valuable insights for advertisers, helping them shape
 14. their campaigns to be more effective on the platform.

16. **Google Cloud Vision**

17. The advertisements (as image files) from the posts were scraped and then
 18. processed using GCV. While the premise of this research argues for the
 19. use of GPT-4 models, previous research has shown GCV to be useful when
 20. combined with other data and tools in qualitative analysis (Omena et al. 2021;
 21. Razis et al. 2020). Therefore, this research utilized GCV to understand if it
 22. would still be useful as a supplementary tool. The use of GCV aligns with Step
 23. 2 of thematic analysis of generating the initial codes. GCV uses ML to iden-
 24. tify and extract an image's features using models that have been pre-trained
 25. on large datasets of images. This structured information is sometimes called
 26. image annotations or image labels.

27. This study utilized the following GCV 2.0 features: facial detection and
 28. associated emotional state, colour palettes, object recognition and optical
 29. character recognition (OCR). While other features were available, such as
 30. detecting explicit content, these were deemed irrelevant to this research. GCV
 31. has been validated as having a high correlation between the confidence scores
 32. given to labels and human agreement with those labels in a previous study by
 33. Schwemmer et al. (2020).

34. The facial detection features were limited to detecting if people's faces
 35. were present in each ad, how many faces were present and, if detected, the
 36. likelihood of the following emotions being portrayed by each face; anger, joy,
 37. surprise and sorrow. The colour data collected consisted of the ten most domi-
 38. nant colours in each ad. The data for each colour comprised a sRGB colour
 39. value and the proportion of the image the colour appeared in. The object
 40. recognition feature returned data on each image that consisted of the names
 41. and confidence score of potentially matching objects. The object recognition
 42. data was then one-hot-encoded, encoding everything with less than an 80 per
 43. cent confidence score as '0'.

46. **GPT-4 Turbo**

47. Continuing with Step 2 of thematic analysis of generating the initial codes,
 48. GPT-4 Turbo was employed (in parallel to GCV) to conduct a contextual anal-
 49. ysis of the advertisements. Requests to the GPT-4 Turbo API included each
 50. image and a consistent set of instructions for the analysis of each image. The
 51. instructions consisted of sixteen individual tasks structured to discern the
 52. underlying strategies and appeals used in each advertisement and code them.

The tasks either asked GPT-4 Turbo to categorize the images based on a list of given categorical values, categorize the image using its judgement or provide an open-ended explanation of some aspect of the advertisement. The following are the sixteen tasks within the prompt:

1. *Categorical theme*: Identify the categorical theme of the advertisement based on its purpose and context.
2. *Advertising strategy*: Identify the advertising strategy employed, providing a keyword or key phrase encapsulating the approach.
3. *Rhetorical strategy*: Identify which rhetorical strategy is used in the advertisement. Classify as ethos (credibility), pathos (emotions) or logos (logic).
4. *Meaning of the image*: Analyse the image's content, symbolism and intended message. Provide a brief summary.
5. *Visual strategy*: Describe the visual strategy used in the advertisement in one sentence, highlighting elements like layout, colours and imagery.
6. *Dominant visual element*: Identify the most dominant element in terms of visual hierarchy as a keyword. For example, 'Image', 'Headline' and 'Logo'.
7. *Dominant colour*: Identify the dominant colour used in the advertisement as a keyword. For example, 'Blue'.
8. *Tone of voice*: Identify the tone of voice employed, classifying as one of the following keywords: 'Formal', 'Informal', 'Humorous', 'Serious', 'Optimistic', 'Motivating', 'Respectful', 'Assertive', 'Conversational'.
9. *Emotional appeal*: Identify the emotional appeal employed, classifying as one of the following keywords: 'Happiness', 'Sadness', 'Humour', 'Anger', 'Compassion', 'Fear', 'Adventure', 'Music', 'Popularity', 'Gratification', 'Inclusion', 'Romance', 'Trust', 'Guilt', 'Potential', 'Status', 'Pain solution', 'Scarcity', 'Celebrity endorsement', 'Youth', 'Leadership', 'Testimonial', 'Comparison', 'Pride', 'Values'.
10. *Humour*: Identify if humour is used and classify the humour as a keyword that describes it. Example: 'Self Deprecation'. If no humour is used, classify this as 'N/A'.
11. *Call to action*: Identify if there is a call to action. Classify as True or False.
12. *Headline leading*: Identify if the advertisement leads with a headline. Classify as True or False.
13. *Audience – gender*: Identify the intended audience's gender. For example, 'Male'.
14. *Audience – culture*: Identify the intended audience's culture. For example, 'Gamer'.
15. *Audience – interests*: Identify the target audience's interests as a keyword.
16. *Cultural references*: Identify any cultural references as keywords.

The prompt also included instructions to follow provided categories strictly, to return the information in JSON format and to be detailed and organized for clarity and ease of analysis.

Visual feature extraction

To extract visual features from the images, a pre-trained convolutional neural network (CNN) was utilized. Specifically, the VGG16 model, developed by Simonyan and Zisserman (2014), was employed due to its balance between performance and computational efficiency. Although newer CNN models are available, VGG16's extensive validation, underscored by its citation count of

1. over one hundred and twenty thousand citations on Google Scholar and ease
 2. of use made it a suitable choice for this study.

3. Before processing the images with VGG16, each image was resized to the
 4. VGG16 default input dimensions of 224×224 pixels. Then, the pre-trained
 5. VGG16 model available through Keras (2024) was used, excluding the top
 6. three fully connected layers typically responsible for image classification and
 7. setting the pooling to average to limit the dimensionality of the output. This
 8. adjustment enabled the model to output 512-dimensional feature vectors for
 9. each image, which served as a numerical abstraction of the visual content.
 10. These feature vectors encapsulate essential visual information, including
 11. textures, shapes and patterns. This crucial pre-processing step allows subse-
 12. quent clustering algorithms that require numerical data to function and begins
 13. Step 3 of thematic analysis, searching for themes.

15. **Textual feature extraction**

16. As with visual feature extraction, the textual data were needed to be repre-
 17. sented numerically for later clustering purposes. To achieve this, term
 18. frequency-inverse document frequency (TF-IDF) was applied to the ‘visual
 19. strategy’ output from GPT-4. TF-IDF, an natural language processing (NLP)
 20. technique, evaluates the importance of words within a document relative to
 21. a corpus (Robertson 2004). This method assigns weighted values to words,
 22. ensuring that common terms do not overshadow less frequent but informa-
 23. tive terms. Specifically, TF-IDF combines term frequency (TF), which measures
 24. how often a term appears in a document, with inverse document frequency
 25. (IDF), which reduces the weight of frequently occurring terms and increases
 26. the weight of rare terms. The product of TF and IDF provides a numerical
 27. statistic reflecting a word’s importance in the document. The result was a
 28. high-dimensional matrix representing the textual data.

29. The high dimensionality of the text data posed challenges for clustering,
 30. as it overshadowed the visual features extracted by VGG16. To address this,
 31. principal component analysis (PCA) was applied to the TF-IDF data. PCA is
 32. a dimensionality reduction technique that transforms high-dimensional data
 33. into a lower-dimensional form, while retaining most of the variability (Jolliffe
 34. 2002). By reducing the TF-IDF data to 512 dimensions, it matched the dimen-
 35. sionality of the visual features while maintaining 85 per cent of the TF-IDF
 36. data variability, facilitating a balanced approach to clustering.

39. **Clustering process**

40. The clustering process aimed to group advertisements with similar visual
 41. features and strategies, facilitating the identification of distinct themes and
 42. patterns. The combined feature set, consisting of 1024-dimensional vectors
 43. from both the visual (VGG16) and textual (TF-IDF reduced by PCA) data,
 44. provided a comprehensive representation of each advertisement. This process
 45. represents Steps 3 and 4 of thematic analysis of searching for and reviewing
 46. themes.

47. Several clustering techniques available in the Python library, scikit-learn,
 48. were experimented with (scikit-learn 2024), including Affinity Propagation,
 49. DBSCAN and K-Means. The high dimensionality of the data proved difficult
 50. for everything but K-Means, which was surprising, given this algorithm has
 51. known difficulty with high-dimensional data. This is because the K-Means
 52. algorithm uses Euclidean distance between points to establish clusters, which

tend to become more uniform as the dimensions increase for each data point. This phenomenon can make it difficult for the K-Means algorithm to distinguish between points and form distinct clusters effectively. For these reasons, although K-Means worked the best of all the clustering algorithms trialed, it still required finessing and multiple attempts to work.

Before the issue of coherent clusters could be addressed, the question of how many clusters (i.e. the value of K) needed to be resolved. Unlike DBSCAN and Affinity Propagation, K-Means clustering requires that the user define how many clusters are required. Typically, the value of K is estimated by using the 'elbow method', a heuristic used to determine the optimal number of clusters by plotting the within-cluster sum of squares against the number of clusters and identifying the point where the rate of decrease sharply slows down, resembling an 'elbow' shape (Kodinariya and Makwana 2013). However, due to the high dimensionality of the data, no clear elbow could be identified. Instead, an approximate range of 10 to 22 was identified. Braun and Clarke (2006) state that there is no precise number of themes to aim for when conducting thematic analysis and that not all recognized patterns or clusters need to be included. However, on their website dedicated to thematic analysis, the authors note two to six themes are appropriate for inclusion in a single journal article (Braun et al. 2021). With these parameters in place, various values of 10, 13, 16, 20 and 22 were tested for K with the mindset that not all clusters be used as themes.

Due to the unsupervised nature of clustering, traditional accuracy metrics were not applicable to validate the clusters. Instead, visual inspection methods were employed to validate the coherence and thematic consistency of the clusters for each value of K. This involved manually reviewing contact sheets and word clouds produced from each cluster to ensure that they represented meaningful groupings. The researcher found for lower values of K, the clusters

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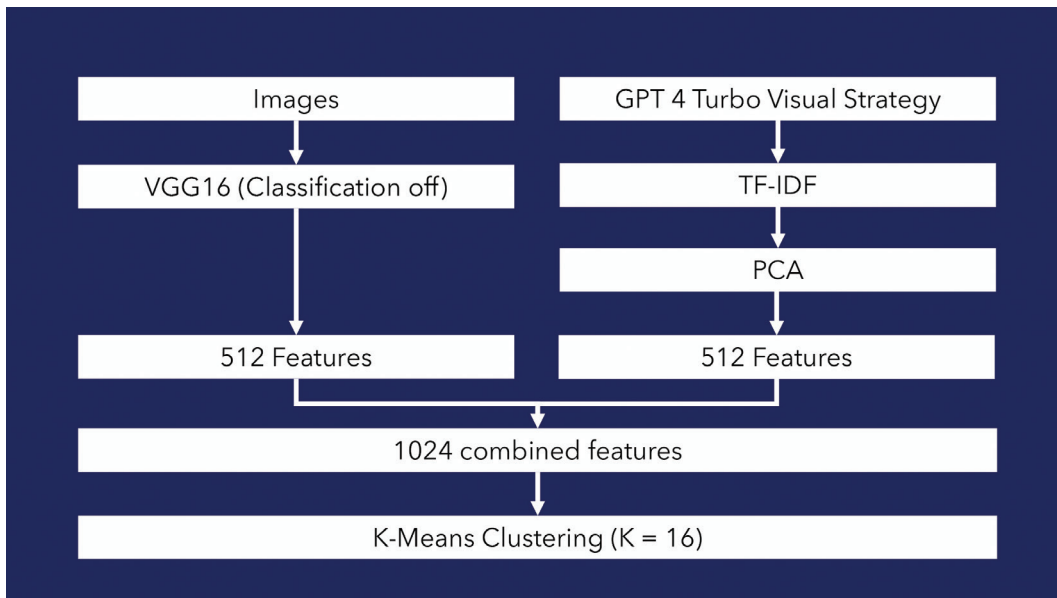


Figure 2: A diagram of the clustering process, which used VGG16, TF-IDF, PCA and K-Means clustering.

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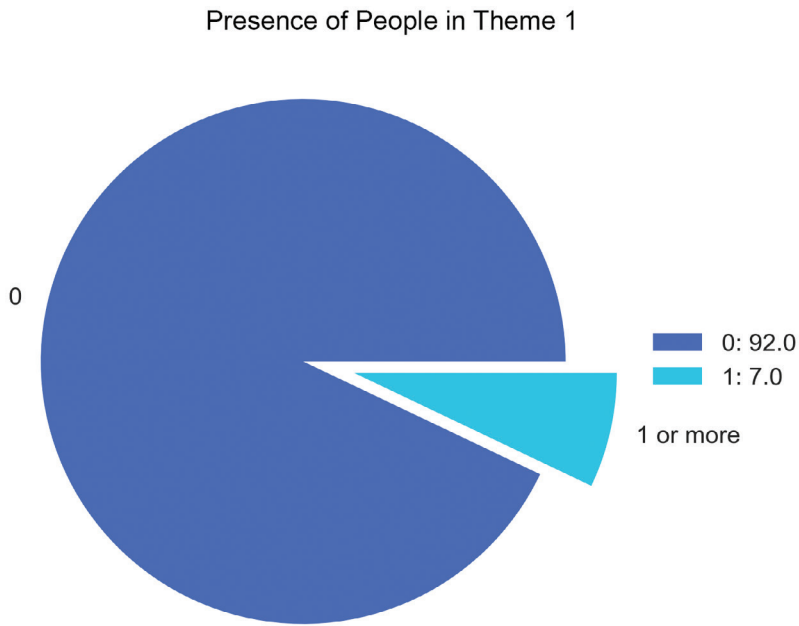


Figure 5: A graph summarizing the GCV facial detection data which show the proportion of ads in which people are present for theme 1.

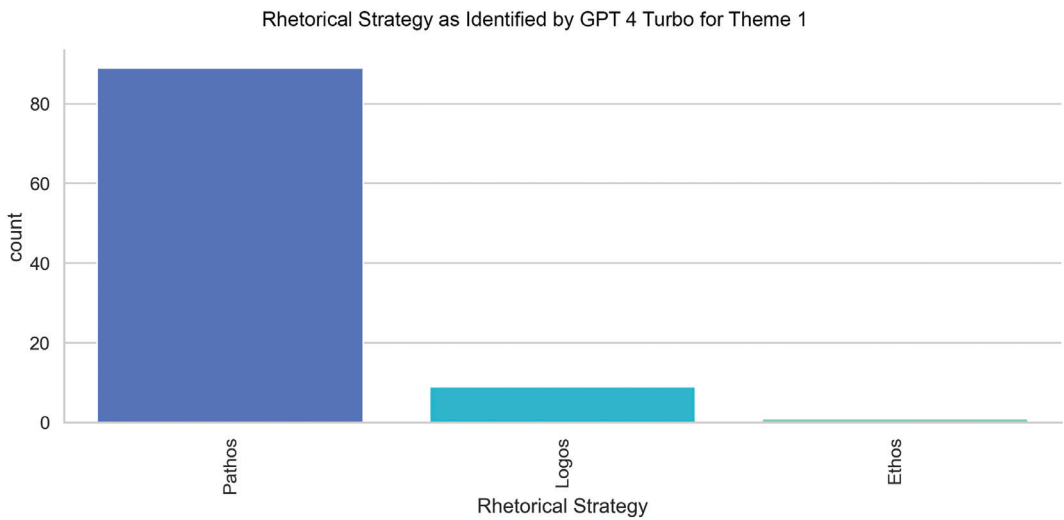


Figure 6: A graph showing the rhetorical strategy of the ads in theme 1.

copyright reasons, the images used in this study cannot be included as part of this article; however, they can be viewed by following the links in the dataset to their original online locations. Further, this dataset can be used to view the outputs of GCV and GPT-4 Turbo, which due to their high dimensionality are not practical to include herein.

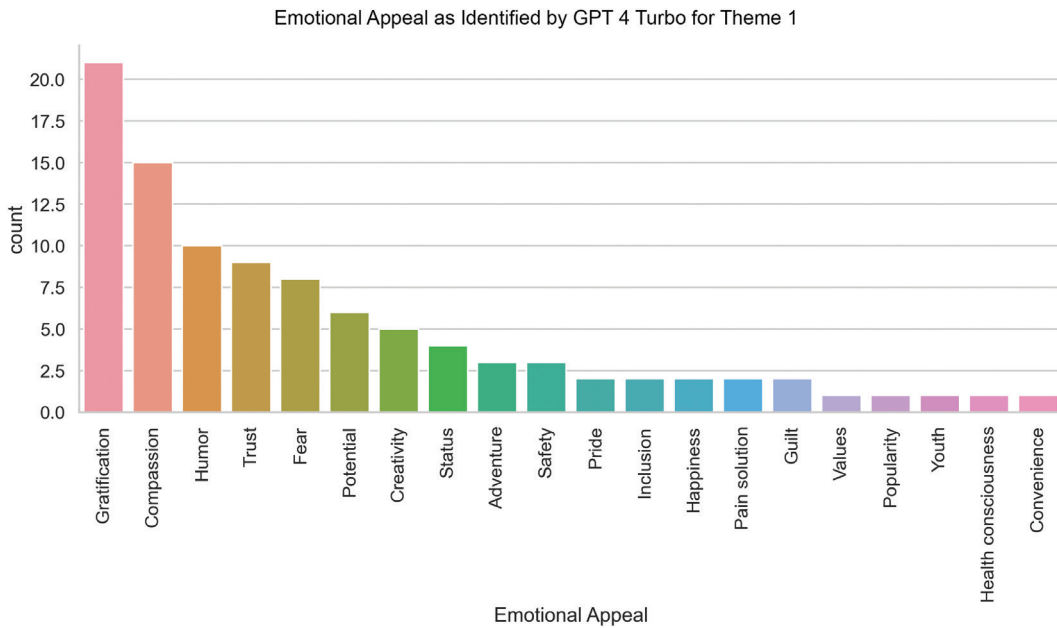


Figure 7: A graph categorizing the emotional appeals in the ads of theme 1.



Figure 8: A colour palette showing the ten most used dominant colours in theme 1.

THEMES

The application of CQVA on the advertisements resulted in ten coherent clusters, of which five themes were identified for inclusion in this study.

Theme 1: Minimalist visual metaphor

The ‘minimalist visual metaphor’ cluster is characterized by a minimalist approach, utilizing a central dominant visual that is a metaphor against an uncluttered background typically consisting of a flat colour. The central visual is usually a photographed or photo-manipulated element. The ads feature very low word counts with a median of eight words per advert, showing no preference for headline-leading or image-leading strategies. These ads rely heavily on brand awareness to help communicate their message and typically employ bright, analogue colour palettes to draw attention to a single symbolic visual. Notably, the advertisements in this cluster rarely feature people. With

1. 99 advertisements, this was the largest cluster, nearly twice the size of the
2. average cluster size of 54.

3. A sub-theme was detected and formed the second-largest cluster at 71
4. ads. This sub-theme was similar in all regards except instead of using an
5. isolated photographic or photo-manipulated element, a stylized vector illustration was used.

6. Examples:

7. Examples:
- 8.
9. • Lego (<http://i.imgur.com/UyxQR.jpg>): Uses two white Lego bricks casting
10. a shadow of a boat against a blue background with no text except the
11. Lego logo in the corner, symbolizing infinite creativity and construction
12. possibilities.
13. • American Heart Association (<http://i.imgur.com/DgLkijD.jpg>): Depicts
14. a French fry container filled with bullets against a white background,
15. symbolizing the dangers of unhealthy fast food, with minimal text.

16. **Theme 2: Magazine nostalgia**

17. The 'magazine nostalgia' theme is characterized by a traditional approach to
18. print advertising. These ads feature high word counts, with a median of 50
19. words per advert, and typically lead with headlines, often providing detailed
20. descriptions of products or services. The advertisements frequently exhibit
21. self-awareness, acknowledging their nature as ads, and use either a serious
22. or humorous tone. They utilize analogue colour palettes to aid text legibility.

23. Examples:

24. Examples:
- 25.
26. • Campbell's Condensed Chicken Noodle Soup (<https://i.redd.it/3efrje7tal571.jpg>): Full-sized magazine print ad featuring a large
27. headline, a byline, two columns of text, a pull quote and a visual of a soup
28. bowl accompanied by a soup can, reminiscent of a 1990s magazine article.
29. • Daihatsu Hijet MPV (<http://i.imgur.com/v6Z4pRA.png>): Full-sized magazine
30. print ad with a headline stating the vehicle can 'pick up five times
31. more women than a Lamborghini', using self-deprecating humour to
32. highlight its practicality.

33. **Theme 3: Text on white**

34. The 'text on white' theme features advertisements that predominantly use black
35. text on a white background. These text-heavy ads have a median word count of
36. 58, the highest among all clusters. The lack of imagery means these ads are over-
37. whelmingly headline leading. They typically employ humour to engage view-
38. ers and encourage them to read the text. Although logical appeals are present,
39. the cluster still predominantly comprise emotional appeals. The colour palette
40. is primarily black and white, with occasional pastel colours to aid text legibility.

41. Examples:

42. Examples:
- 43.
44. • Porsche (<http://i.imgur.com/6tgLBx8.jpg>): Black text on a white page with
45. the title 'Nobody's perfect' listing the 1983 LeMans race results, where
46. Porsche claimed nine of the top ten positions, using irony to underscore
47. near perfection.
48. • Ogilvy (<https://i.redd.it/6s2sn4oicsf51.jpg>): Full page of text featuring a
49. headline 'How to create advertising that sells', followed by 38 points high-
50. lighting the agency's experience and credibility.
- 51.
- 52.

Theme 4: Photo-manipulated person

The 'photo-manipulated person' theme features advertisements predominantly showing people who are either photo-manipulated or illustrated as semi-realistic caricatures. These images cover the entire ad, leaving little room for text, making the ads image-led. They are designed to shock or make a visual pun, depending on the ads communication objectives. The colour palette emphasizes flesh tones.

Examples:

- Fabric Softener (<http://imgur.com/pfAwYBz>): Depicts two men wrestling, with one smiling joyfully as his face presses against the other's uniform, implying the clothing feels good even in tough situations.
- Health Risks of Smoking during Pregnancy (<http://i.imgur.com/LaVFaiY.png>): Shows a woman smoking with an unborn child's mouth inside her own, suggesting the baby is also smoking.

Theme 5: Landscapes

The 'landscapes' theme is populated by landscape images that have been photo-manipulated to visually communicate the advertisement's key point. These ads have a low word count, with a median of ten words per advert. The ads are image-led, with some featuring no text and others contextualizing the image with a small line of text. The tone is split between visual puns for product marketing and serious tones for awareness campaigns, predominantly conservation-related. The colour palette features earthy tones and analogue colours.

Examples:

- Conservation Ad (<http://i.imgur.com/vHgUs.jpeg>): Aerial view of a large, lush green forest shaped like healthy lungs on one side and a deforested area resembling deteriorated lungs on the other, emphasizing the importance of forests in oxygen production.
- Tabasco Sauce (<http://i.imgur.com/EpFzUUn.jpg>): Depicts a volcano using a human mouth in profile with a fiery eruption, suggesting the sauce's spiciness.

DISCUSSION OF THEMES

Emotional appeals are common across all the identified themes. Emotional appeals in advertising refer to strategies that aim to evoke specific feelings such as happiness, sadness, fear or excitement to influence consumer attitudes and behaviours. Current research shows that emotional appeals tend to be more effective than logical appeals in advertisements (Lin et al. 2014; Teichert et al. 2018). Given that the dataset comprises exemplary examples of ads, it is unsurprising that they predominantly use emotional appeals, which helps confirm the validity of the dataset. Further, Hornik et al. (2017) note that logical appeals containing sex or humour are the most effective, which helps explain why so many of the themes feature humour. A key takeaway for advertisers is that emotional appeals incorporating humour are perceived favourably by Reddit users.

The themes of 'minimalist visual metaphor', 'magazine nostalgia', 'photo-manipulated person' and 'landscapes', all employed visually striking and easily

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1. understandable imagery. The theme 'text on white' stood out as an outlier
 2. in the dataset and was the only cluster of the sixteen to feature little to no
 3. imagery. Overwhelmingly the dataset featured exemplary visual design and
 4. visual communication. This aligns with current research on advertising and
 5. the use of visual communication. Engaging visual communication is crucial
 6. because it not only captures consumer attention but also facilitates easier and
 7. quicker comprehension of the message, thereby enhancing the overall impact
 8. of the advertisement (Manic 2015). Visual communication has a stronger
 9. impact, is more readily understood than text alone, holds consumer attention
 10. and is more engaging (Tilak 2020).

11. Visual metaphors were perceived favourably by Reddit users, as evidenced
 12. by the 'minimalist visual metaphor' theme and its sub-theme being the larg-
 13. est clusters. The 'photo-manipulated person' and 'landscapes' themes also
 14. predominantly employed visual metaphors. These metaphors are effective in
 15. advertising because they create strong associations between the imagery and
 16. the brand, making the ads more memorable and fostering positive consumer
 17. attitudes (Gkiouzeapas and Hogg 2011). By engaging viewers in making
 18. connections, visual metaphors encourage deeper cognitive processing, allow-
 19. ing consumers to interpret images both literally and metaphorically, which
 20. enhances the impact and recall of the advertisements (Kapoor 2011). Research
 21. suggests that metaphors of moderate complexity are especially appreciated,
 22. as they offer a cognitive challenge that can enhance the viewer's apprecia-
 23. tion without being overly difficult to understand (van Mulken et al. 2014). This
 24. cognitive engagement likely contributes to the popularity of such ads on the
 25. adPorn subreddit, as viewers feel clever when they decipher the metaphor,
 26. increasing the likelihood of upvotes and positive reception.

27. **DISCUSSION OF CQVA**

28. The development and implementation of the CQVA method in this research's
 29. test case demonstrated that the method works. The method successfully inte-
 30. grated AI platforms (GPT-4 Turbo and GCV) with unsupervised ML (K-Means
 31. clustering), enhancing the capacity for computer-assisted and contextually
 32. rich analysis of visual data. While the researcher had hoped to fully auto-
 33. mate thematic analysis of images, this was not achieved. However, CQVA
 34. showed several advantages that warrant further investigation and develop-
 35. ment. Further, this was achieved with rudimentary Python knowledge, as the
 36. method used existing APIs, Python libraries and ML algorithms, meaning the
 37. method is easy to replicate.

38. One primary advantage of CQVA is the top-down approach to clustering
 39. from the researcher's perspective. Traditional thematic analysis of large image
 40. datasets requires a bottom-up approach (Braun and Clarke 2006), working from
 41. granular details of each data point through coding, with themes only emerging
 42. after significant time investment. In contrast, CQVA quickly codes and clus-
 43. ters data, providing a holistic view of the dataset. Researchers can then focus
 44. on refining themes by drilling down into granular details within clusters and
 45. adjusting the clustering algorithm to present multiple potential clusters. The
 46. use of contact sheets to visualize clusters allows researchers to quickly assess
 47. the coherence of clusters, making the dataset more manageable and easier to
 48. understand. While setting up the algorithms took a few days, the iterative clus-
 49. tering and visualization process only took a few minutes per iteration, facilitat-
 50. ing rapid adjustments and retesting until coherent themes emerged.
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Another benefit of CQVA is its potential for exploratory data analysis (EDA). While images do not easily lend themselves to summary statistics or data visualization, the textual and categorical data output by GPT-4 Turbo and GCV do. This additional information allowed the data to be understood in richer and different ways, such as through word clouds and graphs, which were particularly useful in the early stages of understanding the data as a whole and any potential clusters. As Tukey stated, ‘exploratory data analysis can never be the whole story, but nothing else can serve as a foundation stone – as the first step’ (1977: 3).

The utility of GCV varied. Object recognition data were largely unhelpful for clustering and were disregarded in the final theme exploration. This was to be expected, given the ‘semantic gap’ noted by Chen and Chen (2017). However, as noted by Omena et al. (2021) and Razis et al. (2020), GCV can be useful when supplemented with other data, which proved the case in this study. Facial detection data were of limited use, except in identifying the presence of people in advertisements, which helped define some themes. Colour data were useful, but the contact sheets provided similar insights, making this step potentially redundant. OCR text proved very useful, with simple summary statistics of word counts and word clouds helping to define the nature of each cluster. Having the advertisement text in a tabular format also aided in exploring and understanding each potential cluster.

The data generated by GPT-4 Turbo were of varying quality and usefulness. The prompts asking GPT-4 Turbo to categorize images using its judgement were of limited use. For example, the ‘categorical theme’ responses varied too much to be useful without manual clean-up, as there was no consistency in responses. Rather than categorize an advert as just ‘food’, GPT-4 Turbo used many similar but distinct responses, such as ‘fast food’ or ‘food and beverages’. While the slight differences did not impede the understanding when reviewing individual data points, this made quantitative measures and some EDA tasks impossible without manually cleaning the data first. However, the researcher noted that a hybridized approach may solve this issue in future applications of CVQA. GPT-4 Turbo could still be useful in making a first-pass open categorization on an image set, which a researcher could then use to develop a list of distinct categories or codebook, an idea explored by Zhu et al. (2024) on thematic analysis of text with earlier GPT models. Further, once a codebook is developed, this could be used by AI for discrete coding, as the results demonstrated that GPT-4 Turbo performed better when given distinct categories to use. For example, the ‘emotional appeal’ prompt included 25 categories and worked well, sticking to the categories and returning accurate results. However, the researcher noted that categorization tasks that required considering the interplay between imagery and text, such as identifying whether an advertisement was headline leading or not, were challenging for GPT-4 Turbo. The most useful output from GPT-4 Turbo was textual descriptions, which were generally accurate and well suited for NLP and subsequent clustering by unsupervised learning models.

The extraction of visual features using VGG16 for clustering worked well. Clustering the VGG16 output without the addition of GPT-4 Turbo data still produced reasonable results with coherent clusters. However, without GPT-4 Turbo data, images containing more than a couple of lines of text struggled to coalesce into coherent clusters, with the clustering algorithm grouping all text-based images regardless of the underlying advertising or visual strategy.

1. This outcome is expected since VGG16 primarily extracts visual patterns, treat-
 2. ing text merely as another visual element.
 3.

4. **LIMITATIONS AND FUTURE DIRECTIONS**

5. This pilot study represents a first step in exploring CQVA. The method was
 6. tested on a single case study involving the 'adPorn' subreddit, limiting the
 7. generalizability of the findings. As is the case with many pilot studies, there
 8. are many limitations and directions for the future.
 9.

10. First and foremost, this process involved a human to guide it. The GPT-4
 11. Turbo prompts that were open-ended and categorical failed to generate useful
 12. insights. Further, GPT-4 Turbo struggled in some instances to correctly classify
 13. data, such as if the image was headline leading or not. The clustering process
 14. took multiple attempts to work, with a human reviewing each iteration of
 15. clustering for coherence. While the process was much quicker than manual
 16. analysis, it was by no means fully automated and needed a human researcher
 17. to drive it.

18. The use of AI in analysing images introduces the risk of generating hallu-
 19. cinated or inaccurate information, which could compromise the integrity of
 20. the data. This was an observed phenomenon in this research, where in one
 21. instance, GPT-4 Turbo did not follow the categories included in the prompt
 22. and instead invented a new category for one of the images. Further, some of
 23. the open-ended questions asking for textual descriptions of the images got
 24. details wrong. This was not a concern in this specific research, as quantita-
 25. tive measurements were not important, and the noise these mistakes caused
 26. was not an issue due to (1) the high dimensionality of the data, (2) the use of
 27. additional clusters that helped filter out this noise and (3) a human interpret-
 28. ing the clusters. However, this hallucination risk would need to be addressed
 29. for methods that use quantitative measures, such as content analysis. One
 30. potential solution could be to use a new model such as GPT-4o, which prom-
 31. ises better performance on images, and fine-tune the models if this feature
 32. becomes available in the future. Another would be to adjust the temperature
 33. (e.g. how predictable or random the responses are) of the GPT model and see
 34. how the performance differs.

35. The clustering of features consisting of visual elements and descriptions of
 36. the visual strategy of the image was largely an 'educated guess'. The researcher
 37. rationalized that this would work based on his own tacit knowledge, and it
 38. appears to do so; however, far more work is needed to validate this. Further,
 39. existing frameworks for analysing images could be employed in place of the
 40. 'visual strategy' prompt, such as the six perspectives of visual analysis, outlined
 41. by Lester (2011) as 'personal', 'historical', 'technical', 'ethical', 'cultural' and 'crit-
 42. ical' or classic gestalt principles of composition such as 'similarity', 'continua-
 43. tion', 'closure' or 'proximity' (Koffka 1935), or simple compositional rules such
 44. as the 'rule of thirds'.

45. VGG16 is primarily designed for object detection and classification and
 46. therefore may not be optimized for the qualitative analysis of advertisement
 47. images, potentially skewing the clustering process. Future research could
 48. explore training its own CNN or explore other existing algorithms such as
 49. RESNET (He et al. 2015) or SCAN (van Gansbeke et al. 2020).

50. The absence of traditional validation metrics for unsupervised learning
 51. models such as K-Means used in this research makes it difficult to measure
 52. and communicate the accuracy of the findings objectively. Granted, this is not

the purpose of thematic analysis; however, it does limit the application of the tools explored in this research to other methodologies.

Essential tasks like data wrangling and cleaning are manual and do not scale efficiently with increased data volumes, posing a bottleneck for larger datasets. This was by far the slowest part of this research and would need addressing if working on much larger datasets. Further, as with all visual research, the data used are subject to copyright. This is particularly limiting in this study as the contact sheets used to validate the clustering cannot be published.

The researcher noted on reflection of the results of stable clusters that some of the categorical data generated by GPT-4 Turbo could have been used to divide the dataset into smaller sets, then clustered these using only the output of VGG16, or vice versa. Such an approach may help limit the amount of noise or mis-classified data points and warrant further exploration.

CONCLUSION

The development and application of CQVA in this research has demonstrated the potential of integrating AI and ML into qualitative visual analysis. By leveraging AI platforms like GPT-4 Turbo and GCV, along with unsupervised ML techniques such as K-Means clustering, CQVA enhances the efficiency and depth of thematic analysis for large visual datasets. This approach not only automates initial coding and clustering using ‘off the shelf’ technologies but also maintains the richness and contextual understanding traditionally achieved through manual methods. Furthermore, the top-down approach and ability to conduct additional EDA tasks provide new ways for researchers to familiarize themselves with visual datasets.

The study’s application of CQVA to advertisements from the ‘adPorn’ subreddit has yielded valuable insights into effective advertising strategies on Reddit. Emotional appeals, particularly those incorporating humour, were found to be prevalent across all themes, aligning with existing research on the effectiveness of emotional over logical appeals. A clear preference was identified for ads utilizing visual metaphors, which were the most common. Additionally, the importance of engaging visual communication was underscored, with themes employing visually striking and easily comprehensible imagery being favoured by Reddit users.

Despite its promising results, CQVA is not without limitations. The need for human intervention in guiding AI outputs and validating clusters highlights the current limitations of fully automating qualitative analysis. Additionally, the study’s reliance on a single case study limits the generalizability of the findings, necessitating further research across diverse datasets and contexts.

In conclusion, CQVA represents a significant advancement in qualitative visual analysis, offering a scalable and cost-effective alternative to traditional methods. Its ability to quickly process and analyse large datasets while maintaining contextual richness makes it a valuable tool for both academic research and industry practice. As AI and ML technologies continue to evolve, the potential for CQVA to transform qualitative visual analysis will only grow, paving the way for more efficient and insightful research methodologies.

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1. common narratives around generative AI that tend to position the technology
 2. as a radical break with the past. One such work is that of Leslie and Meng
 3. (2024: 2), who invoke Toffler's idea of 'future shock' to describe the 'explosive
 4. rise' of the 'generative AI revolution' and its attendant society-wide disorienta-
 5. tions. Such contributions, however, tend to overlook elements of generative AI
 6. systems that are continuations of problematic work trends, which is a primary
 7. concern of this work.

8. This article will develop its arguments over a series of discrete stages. First,
 9. it will define the scope of the fields of work that it is discussing and provide
 10. background on what makes this labour attractive to so many people. I will then
 11. proceed to examine examples of how creative work has changed in this early
 12. phase of the adoption of generative AI, focused on the ways graphic design-
 13. ers and copywriters, in particular, are sharing examples of, and responses to,
 14. generative AI-wrought changes. From these frontline observations, I will then
 15. transition into elaboration upon Graeber's work and its relevance to this argu-
 16. ment. Following Graeber, I explain Illich's concepts of radical monopoly and
 17. conviviality, and how in these concepts we might find potential solutions to
 18. these emergent issues. I close this article with a synthesis of these theoretic-
 19. al approaches and thoughts towards better generative AI and approaches to
 20. creative labour.

22. CULTURAL LABOUR AND ITS ATTRACTIONS

23. Before proceeding further with this analysis, I will recognize the nebulous
 24. nature of the field I am writing about in this article. Primarily, there is what
 25. Galloway and Dunlop refer to as 'terminological clutter' around ideas of crea-
 26. tive and cultural industries (2007: 23). In their examination of the issue, the
 27. first problem emerges around the definition of 'culture', which appeared to
 28. expand over the latter part of the twentieth century to incorporate seem-
 29. ingly anything with symbolic content. Galloway and Dunlop, however, follow
 30. Hesmondhalgh and Pratt in supporting a definition of the culture industries
 31. that recognizes that, 'the main interest in such industries is the symbolic,
 32. aesthetic and, for want of a better term, artistic, nature of their output, because
 33. these outputs can potentially have a strong influence on the way we under-
 34. stand society' (Hesmondhalgh and Pratt 2005: 6).

35. There is still some slack in this approach, but it is worth persisting with this
 36. definition because it has analytical utility in discussing the unique challenges
 37. shared by the culture industries. For Hesmondhalgh, the creative arts, such
 38. as painting or sculpture, are excluded from the culture industries, which in
 39. his reckoning includes work in advertising and marketing, broadcasting, film,
 40. the internet, music, print and publishing and video games (Hesmondhalgh
 41. 2013). In this work, I tend to follow this definition of culture industries and
 42. its associated labour, partially to identify a specific group of occupations rele-
 43. vant to this analysis and partially to minimize the incidence of the similarly
 44. problematic term 'creative' from discussion. The latter concern is largely about
 45. the argument I am making here; I am exploring questions about how labour
 46. in selected culture industries is changing in the wake of generative AI rather
 47. than more prosaic questions about creativity. As such, whether the types of
 48. work discussed in this article are more or less creative with the assistance
 49. of generative AI is of secondary importance to its impact upon the types of,
 50. and relationship to, work involved at a mundane, 'everyday' level in culture
 51. industries.
 52.

This is not to imply that creativity is an issue completely absent from this discussion, and as such, it is also a term worth further definition and consideration here. Creativity is important to this discussion because cultural labour often draws upon it as a defining feature, as is the case with the designers and copywriters discussed here. Runco and Jaeger (2012) discussed the idea of a ‘standard’ definition of creativity and noted the difficulty scholars have had over time in finding settled definitions. They note, however, that creativity often involves the production of appropriate, novel solutions within specific contexts. That is to say that creativity has a certain social adaptability to it, what is creative to one group may not be so to another, and consequently, it has an inherent element of social judgement in it. Later work aiming to create a dynamic, rather than standard definition of creativity identifies a similar strand of thought involving a certain sensitivity in solving a problem (Walia 2019). This socially contingent ability to solve problems is apt for this discussion, as the professions being discussed are increasingly, as I will touch upon later, reliant on the social aspect of their work as insurance against further encroachment by generative AI.

Though a more comprehensive investigation would no doubt be interesting, for the purposes of fitting this analysis within the limits of a single journal article, I am focusing primarily on two specific professions within the culture industries: graphic design and copywriting. In my research, these two have emerged as among the most targeted kinds of work in terms of the types of generative AI most commonly in use. Those generative AI packages are among the most recognized in discourse on the topic: ChatGPT, Gemini, Dall-E and Stable Diffusion (among others). Having established some of the scope of this particular work, I will return to these elements regularly throughout the article.

One more important foundation of this article is an understanding of why people go into the types of cultural labour I am most interested in here. For most, there is something about the creative side of visual design or writing that draws them in. Some research, such as Menger’s work on ‘creative professions’, identifies in creative professional participants the idea of a ‘vector of individual accomplishment’ (2014: 8) that these workers derive satisfaction from the act of producing tangible creative artefacts and a continual improvement of their craft. Similarly, Susan Luckman and Jane Andrew in their report on creative work found that

[W]hat strongly came through from our interviews was the persistence of what we refer to as the ‘more than capitalism’ values of arts and creative practice: ‘doing what you love’, a belief in producing art as a worthy activity unto itself.

(2020: 29)

They also identified that a lifelong interest in the field of their choice was often sparked by an influential teacher or family member, indicating a deeper attachment to such careers than simple economic motivations. These points are important because they highlight a critical rupture between the motivations and contemporary practice broadly across the types of work that will be discussed. Where cultural workers often pursue a ‘more than capitalism’ line in their work, it is the impositions of the contemporary economic and technological systems that demean the labour and, at times, diminish the work. It is to this problem of cultural work as it is now emerging after generative AI that I now turn towards.

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1. THE EMERGENT SYSTEM OF GENERATIVE AI IN COMMUNICATIONS 2. AND CULTURE WORK

3. Generative AI, increasingly funded by venture capital (Thomas et al. 2024),
4. is built with profit-making, for both developer and client, rather than any
5. broader benefit for people in mind. A study by Iorga, in what might be consid-
6. ered the early days of the public awareness of generative AI in 2022, came
7. to the conclusion, after asking 31 participants to choose between computer
8. and human-generated copy, that AI copywriting might substitute for low-cost,
9. mass-produced advertising text (Iorga 2022). This is notable in this context
10. because of what was clearly not produced by AI – high-impact, persuasive
11. copy, let alone the next great novel – and the frame that the researchers used
12. to recuperate any value for AI in the experiment, merely the achievement of
13. copy at lower cost and without the need to protect workers. It is also notable
14. that ChatGPT and now Gemini and Claude have improved significantly since
15. 2022, but many examples repeat the pattern; no matter how generative AI
16. improves in terms of copy creation, its primary benefits are often framed in
17. terms of productivity that it allows workers across sectors to get more work
18. done in less time.

19. Similar things are true of image generators too, such as Dall-E and Stable
20. Diffusion. As researchers such as Janelle Shane show, these generative AI
21. systems are great at approximating real design and text but more often than
22. not output weird (or even disturbing) lookalikes, such as mislabelled common
23. items and being unable to develop passable answers to slightly askew prompts
24. (Shane 2023, 2024a, 2024b). Despite the best efforts of researchers such as
25. Shane, graphic designers and illustrators are seeing their skills devalued by
26. the results generative AI can bring to even relatively unrefined prompts (Beyai
27. 2023; Shaffi 2023). Generative AI does not seem to remove these jobs entirely
28. but instead makes them seem more achievable by people with less experience
29. through this devaluation, putting the designer and illustrator at a disadvan-
30. tage in discussions with employers or clients.

31. Meanwhile, online media presences are applying generative AI to the
32. creation of website frontends. For example, YouTube channels such as ‘Codex
33. Community’ instruct viewers on how to link AI package outputs together
34. to produce full-blown, good-looking websites in short timeframes (Codex
35. Community 2022). Research by Horn et al. (2024) has created a logistics
36. business with photorealistic CEO video presentations and seemingly real
37. customer service chat entirely out of generative AI with minimal human
38. involvement. This project indicates to us a nascent future in which businesses
39. can seemingly be spun out of ether, without the kinds of employment, such as
40. designers and copywriters, that have so far been essential to start-ups. While
41. many of these efforts, as Shane shows, do not successfully cross the uncanny
42. valley to fool a human audience, others, such as the research by Horn and her
43. team, point to the irrelevance of that problem as the technology improves and
44. corporate entities are happy with ‘good enough’.

45. It seems that while the technical capacities of generative AI technology
46. are debated, an early danger from generative AI has not been the outright
47. replacement of labour but the diminution of the craft involved in cultural
48. work. As one thread on Reddit shows, copywriters are now being flooded
49. with text from co-workers who have used generative AI to create copy that is
50. considered equivalent to the work of the copywriter by many in this particular
51. office environment:
52.

The product managers write the copy using ChatGPT. All the headers they use have a colon (:) in them, which is a dead giveaway – along with inconsistent title case. They don't have any understanding of tone and voice, and generally use casual language for a b2b product. They make up reasons like 'HR is also human' when I bring it up. They ask me to centre a narrative around 'reimagining' and then say they we don't want this because their new narrative is better. I'm the first and only copywriter at this organization, so far the PMs were writing the copy for everything.

(Alanbesodope 2024a: n.pag.)

The author of this post is somewhat despondent, as the project managers have created an environment that is antithetical to the idea of copywriting. Yet, as some of the commenters in the thread point out, sometimes this behaviour is motivated by the need of these other employees to demonstrate their value to the company. In other words, what evolves here is a competition to prove your worth, measured in productivity, to management in order to save whatever scrap of employment you can acquire.

The saga of the Reddit poster would have a sequel though, which revealed more about this kind of competition between employees:

So, the same night I posted, the PMs circulated a list with 10 different copy options for a landing page on the main group, of course with AI generated copy. *Then the designers also sent THEIR ChatGPT generated versions.* It basically became a writing-by-committee session. It was all getting very chaotic, and frankly disrespectful. Why'd they hire me if they had a copywriter (ChatGPT?) [...] I realized that I need to set boundaries. I messaged my manager asking who has the final authority on copy, and GUYS, she really stood up for me. She basically said this to the group: The marketing team will take the call on the final copy and that people should stick to their lanes. That there's someone with expertise in copy within the team, ie me, and that everybody is going to trust my judgement. *People disregarded her comment and continued sending options,* but she rejected all of these with proper reasons.

(Alanbesodope 2024b: n.pag., emphasis added)

There was, for this copywriter, a brief moment of hope when the marketing manager stood up for them, which was subverted by the continued sending of copy options. It is noteworthy here that the designers in this account have also embraced ChatGPT to create copy. This aligns with the idea I have mentioned previously: in today's competitive employment landscape, all employees must demonstrate more productivity. Perhaps more surprising is that so few people except the copywriters in this situation are cognizant of the anti-productive element of presenting so many options; the wealth of options presented means more time needs to be dedicated to sorting appropriate and inappropriate copy. It is almost as if the workers described here genuinely believe that *any* text-oriented problem can be solved with the application of generative AI, and subsequently any productivity gains are offset by worker's desperation to prove their worth to management.

A larger problem emerges when we consider that ChatGPT is not the only piece of generative AI in use at the moment and that new variations on the idea are being released consistently over time. Often built from cores of

1. a more general or established model, such as ChatGPT or Stable Diffusion,
 2. programs such as copy.ai (copywriting), Murf (voice-overs), Aiva (music),
 3. Sora (video) and Adcreative (advertising) are all in active use by organiza-
 4. tions globally. One can see in Horn's work (Horn et al. 2024) the outlines of a
 5. future in which, to borrow from the case of the Reddit poster above, what we
 6. now call project managers do not post alternative copy options but are instead
 7. the entirety of an operation. And yet, in that same outline, one can also see
 8. a future in which the copywriter or designer is using the same tools for the
 9. same purpose but with a different eye. The skills involved in daily work shift
 10. from crafting cultural artefacts to shepherding generative AI tools towards
 11. whatever purpose managers and investors wish to fulfil.

12. Perhaps it goes without saying then that this shift to multipurpose AI shep-
 13. herding is already happening. As some YouTube personalities are currently
 14. sharing, one can create entire websites or farm content using almost all AI
 15. workflows (Codex Community 2022; Wholesale Ted 2024). This often falls
 16. under the discourse of the 'side hustle', or the second job that more and more
 17. people need to meet the cost of living in the mid-2020s, often with the distant
 18. promise of striking it rich in 'passive income', or money that is earned with
 19. little active input. This all makes the metaphor of a gold rush seem fitting;
 20. thousands scrambling to a distant locale that is hostile to human life, enrich-
 21. ing a few and impoverishing many, such that one would apparently be an idiot
 22. to ignore it. Meanwhile, as Sadowski and Ongweso point out in their influen-
 23. tial podcast *This Machine Kills*, companies such as Nvidia become among the
 24. most valuable on Earth, not because they build or use AI, but because they
 25. build the hardware on which it runs most efficiently (Sadowski and Ongweso
 26. Jr. n.d.). The more things change, the more they stay the same.

27. GRAEBER AND THE PROBLEM OF POINTLESS WORK

28. To return to this metaphor of a gold rush, however, is to give a veneer
 29. of adventure to something that is at once both far more mundane and
 30. sinister. More importantly, where we might at least attribute to gold rush
 31. miners a sense of taking their destiny into their own hands, in the AI gold
 32. rush, workers such as our Reddit poster are compelled by the vicissitudes
 33. of a precarious labour market to participate in a system in which they have
 34. no control. Graeber identifies this as a relatively recent development, writ-
 35. ing that, '[t]here appears to have been a profound shift, beginning in the
 36. 1970s, from investment in technologies associated with the possibility of
 37. alternative futures to investment technologies that furthered labour disci-
 38. pline and social control' (Graeber 2016: 120). Here, Graeber is proposing
 39. to us that there is a qualitative difference between going to the Moon and
 40. getting passable answers to questions in ChatGPT. Whereas the Space Race
 41. motivated the two superpowers to achieve technical excellence in pursuit of
 42. what each country saw as the future of humanity, ChatGPT harvests a large
 43. amount of the text that is on the internet to let product managers write
 44. copy for, say, a cat litter start-up. Graeber elaborates on this elsewhere in
 45. *Utopia of Rules*:

46. This was not just a political realignment. It was a cultural transforma-
 47. tion. And it set the stage for the process whereby the bureaucratic tech-
 48. niques (performance reviews, focus groups, time allocation surveys...
 49. [sic]) developed in financial and corporate circles came to invade the rest
 50.
 51.
 52.

of society – education, science, government – and eventually, to pervade almost every aspect of everyday life.

(Graeber 2016: 21)

Graeber’s argument is generally about the rise of, and our perverse pleasure taken in, bureaucracy. The regimentation of the bureaucratic structure, the idea that all workers’ outputs can and must be measured, has always, to an extent, existed at odds with cultural labour, whose artefacts are often produced at inconsistent intervals or of varying quality. Think, for example, of the time gap and quality variance between two albums from any given artist, or the capacity for one advertising agency to create an all-time great campaign only to follow it with an anonymous one. In the realm of ‘applied’ creativity, particularly in fields like marketing and graphic design where results are frequently aligned with commercial goals, conformity to bureaucratic structures has become a defining feature, often leading to mediocre outcomes. It is a state of affairs lamented by some prominent advertising and marketing professionals, such as Martin Weigel (2018), who argues that advertising has been stripped of visual appeal and ingenuity by algorithmic forms of advertising that have emerged with the internet. Weigel also argues that algorithmic approaches to advertising and marketing have also caused the industry to escape into a fantasy of consumer personas that fit database fields rather than the tricky work of ethnographic research.

There is a key adaptation of Graeber’s thinking in this context. The rules and consistency of this new operating regime are, to some extent, appealing to a significant portion of the working population, including various segments of the culture industries’ workforce. This was evident in the case of the designers from the previous section who used ChatGPT to create content. Yet when one reads statements from graphics designers, for example, about the impact of generative AI on their jobs, the experience so far has varied. Within one Reddit thread from 2023 asking ‘how will AI change graphic design as a career choice?’, for example, responses ranged from, ‘I’m still waiting to see an example of generative AI doing good graphic design’, to, ‘AI is just another tool in our toolbox we can use to wow clients and keep them coming back’ (Mediocre_One1 2024: n.pag.). There are interesting conceptual concerns too, where AI is already being identified as producing undifferentiated designs, a point towards the ongoing necessity for humans within the design process, as opposed to a simple narrative of job replacement (Hsu 2024). These accounts also confirm that designers are generally cognizant of the need to adapt and also the value of what they bring to design processes, and their frontline opinions on the adoption of generative AI are worth considering in that context. What goes unwritten, to an extent, is the understanding that routine design work has become increasingly bland as computational logic and corporate rules conspire to limit what is worthy of being paid for.

The larger shift that is occurring here is that the source of production shifts from human creativity to computational probability. The human in the process is generally not eliminated but is instead demoted to a functionary that fiddles with questions until the computer can produce the right response. Or as Graeber puts it elsewhere in *Utopia of Rules*: ‘In fact, from inside the system, the algorithms and mathematical formulae by which the world comes to be assessed become, ultimately, not just measures of value, but the source of value itself’ (Graeber 2016: 41). It is at this point that Graeber’s theorization of pointless labour comes into view.

1. Emerging with the publication of an essay, and later a book, entitled
 2. *Bullshit Jobs: A Theory*, Graeber contends that though productivity has gener-
 3. ally continued to rise throughout the latter half of the twentieth century and
 4. early twenty-first century, workers are generally continuing to work the same
 5. (or more) hours (Graeber 2019). This is important in part because Graeber
 6. contrasts it with the prediction of economist John Maynard Keynes that by
 7. the late twentieth to early twenty-first century we would be working fifteen-
 8. hour weeks on account of this increase in productivity. Instead, a new order
 9. emerged that created what some researchers have called ‘socially useless jobs’
 10. (Dur and van Lent 2019: 4) or others, following Graeber’s parlance, ‘bullshit
 11. jobs’ (Dean et al. 2022: 674; Graeber 2019). Graeber points to surveys where 40
 12. per cent of respondents did not think their jobs made the world a better place
 13. as an example of this kind of malaise (Graeber 2019). He proposes a working
 14. definition for this kind of labour:

16. A bullshit job is a form of paid employment that is so completely point-
 17. less, unnecessary, or pernicious that even the employee cannot justify
 18. its existence even though, as part of the conditions of employment, the
 19. employee feels obliged to pretend that this is not the case.

20. (Graeber 2019: 24)

22. Generative AI intensifies the prevalence and demoralizing effects of such
 23. pointless labour. Now it is not just that there are endless forms to be
 24. completed to accompany the smallest of tasks or changes, it is that we are
 25. asking a computer to do it for us, further alienating us from meaningful work.
 26. Generative AI can, by design, make routine tasks quicker to complete, not so
 27. that we can have a Keynesian future of less work, but so that we can complete
 28. more forms than before. The copywriter who may have previously completed
 29. one piece of copy per day, for example, is now expected to submit three thanks
 30. to the intervention of generative AI, but the copywriter no longer writes so
 31. many prompts and proofreads the output of a machine (Williams 2023). The
 32. advertiser who may have previously spent a week perfecting the right, memo-
 33. rable jingle for a radio ad is now expected to A/B test algorithmically gener-
 34. ated text ads served and distributed by another algorithm (Weigel 2018). Or
 35. perhaps a graphic designer who once may have created a poster per day is
 36. now relegated to producing multiple Instagram posts per day, potentially with
 37. the generative AI help now built into Canva, each with expected returns on
 38. investment to be reported upon. In each case, what at least felt like meaning-
 39. ful or fulfilling work becomes drained of both intrinsic and extrinsic value.

42. **RADICAL MONOPOLY AND THE AI SYSTEM OF THE WORLD**

43. The reduction of the value of the culture industries should be understood,
 44. as Graeber suggests, as a systemic problem. It is not, ‘an inevitable effect of
 45. technological development’ (Graeber 2016: 34), but instead the result of social
 46. and political forces that would enforce pointless work on all but the highest
 47. echelons for the sake of preserving the existing system of inequality. That the
 48. generative AI companies are complicit in this through the production of soft-
 49. ware that reinforces the system of the world rather than challenges it is dam-
 50. ning to their claims of creating a better future.

51. What is of most interest to me here, however, is this idea of there being
 52. a system of thought that supports this direction of generative AI software

development. To better think through this, I am drawing upon the work of Illich and his idea of ‘radical monopoly’. Illich’s concern at the time that he introduced this idea in *Tools for Conviviality* (Illich 1975) was that, as someone who had worked in Central and South America, he was seeing the imposition of Global North values upon the Global South through technology. As he puts it succinctly at one point:

I speak about radical monopoly when one industrial production process exercises an exclusive control over the satisfaction of a pressing need, and excludes nonindustrial activities from competition. Cars can thus monopolise traffic. They can shape a city into their image – practically ruling out locomotion by foot or by bicycle in Los Angeles.

(Illich 1975: 52)

Writing from his mid-twentieth-century vantage point, Illich is concerned with industrial processes as the dominant form of economic value creation and the source of the modern consumer mindset. To concur with Illich’s point, in many places, including Perth, where I am writing, the dominance of cars has made it nearly impossible to travel on foot or by bicycle from suburban residential areas to workplaces in the city centre or outlying areas. As a result, the city has been shaped to accommodate cars, pushing aside more straightforward, ecologically friendly and socially responsible modes of transportation. What matters in radical monopoly is not whether that car is a gas-guzzling SUV or family sedan but that cars as a concept have reshaped the way transport is done in ways that are damaging to our society or environment.

Though there are debates about the exact nature of the changes to the global economy and everyday life since the rise of computers and the internet, there is a broad consensus that *something* has changed, particularly in the direction of the concentration of power in communication and economy (Sadowski 2020). Illich’s point, I argue, remains, except that instead of industrial production controlling and reshaping needs, we are now facing the reshaping of everyday activities into forms acceptable to computation and the network economy. A point could be made, as Twenge and Spitzberg (2020) do in relation to a decrease in non-digital social interaction, for example, about the control exerted over social connection by social media since the 2010s. More specifically, here I am arguing that generative AI is beginning to remake cultural labour into something more amenable to the quantitative prerogatives of the digital economy. Crucially, it does not matter whether we are talking specifically about ChatGPT, Dall-E or any of the other packages, it is the very idea of generative AI as it currently exists that forms the radical monopoly over how the technology is developed and applied towards ends that reshape cultural labour. This in essence limits the horizon of what we expect from generative AI.

Though not directly linked to Illich, the idea of generative AI being a radical monopoly has been expressed elsewhere. For example, in an article for *Wired*, VR pioneer Jaron Lanier and Glen Weyl argue that AI is more of a threat because of how it reframes technology:

‘AI’ might be a threat to the human future, as is often imagined in science fiction, or it might be a way of thinking about technology that makes it harder to design technology so it can be used effectively and responsibly. The very idea of AI might create a diversion that makes it easier for

1. a small group of technologists and investors to claim all rewards from a
 2. widely distributed effort.
 3. (Lanier and Weyl 2020: n.pag.)
 4.

5. This critique aligns with Lanier's earlier concerns about the 'hollowing out'
 6. of middle class and creative occupations by the way digital technologies were
 7. being developed in the 2010s (Lanier 2014, 2017). As they point out, the tech-
 8. nology sector directly employs far fewer people now than manufacturing
 9. did in the middle of the twentieth century, yet the question of this displaced
 10. labour is rarely questioned. They go on to write,
 11.

12. [W]hen companies find creative new ways to use networking tech-
 13. nologies to enable people to provide services previously done poorly
 14. by machines, this gets little attention from investors who believe 'AI is
 15. the future,' encouraging further automation. This has contributed to the
 16. hollowing out of the economy.
 17. (Lanier and Weyl 2020: n.pag.)
 18.

19. Lanier and Weyl are pointing towards the way that AI has become an ideol-
 20. ogy, not a technology, and as such, has begun dominating how we think about
 21. questions of value, economy and social relations.

22. With respect to cultural labour, the radical monopoly of generative AI
 23. means we think about creative outputs through two problematic lenses. The
 24. first is that what matters about any of the types of work I have discussed so
 25. far, from copywriting to graphic design, is consistent and plentiful output.
 26. It does not matter if that output is much the same as all the other output
 27. because it was generated by probabilistic maths rather than a human mind,
 28. it matters that it meets the kinds of quantitative targets favoured by compu-
 29. tational, data-oriented and financialized operations. The second lens is the
 30. general resignation to the idea that this is the default future of how we will
 31. use AI and produce creative work. For example, we are beginning to see at
 32. universities globally a scramble to integrate AI into curricula on the grounds
 33. that this is what industry (and presumably society) wants (Liu 2024). This can
 34. be contrasted to what industry might actually need, which might be people
 35. who still understand the foundations of their fields or that the value of crea-
 36. tive processes is more than sheer output. The route away from this problem-
 37. atic situation is not entirely clear.
 38.

39. **CONVIVIALITY AND COUNTERFOILS**

40. Returning to Illich's *Tools for Conviviality*, however, yields a possibility worth
 41. pursuing with regards to rethinking AI towards more just and humane
 42. outcomes in the form of what he calls 'conviviality'. Where radical monopoly
 43. is the designation of where technologies are dominated by a certain, industrial
 44. way of thought rather than the actual fulfilment of needs, conviviality is a term
 45. to describe how we might design technology for more humane ends:
 46.

47. I choose the term 'conviviality' to designate the opposite of industrial
 48. productivity. I intend to mean autonomous and creative intercourse
 49. among persons, and intercourse of persons with their environment;
 50. and this in contrast with the conditioned response of persons to the
 51. demands made upon them by others, and by a man-made environment.
 52.

I consider conviviality to be individual freedom realized in personal interdependence and, as such, and intrinsic ethical value. (Illich 1975: 11)

Illich preferred that convivial tools required case-by-case thought rather than a comprehensive description of some future society. It is a call to arms for a better thinking-through of technological development and application. For readers in 2024, he makes statements to that end that sound highly contemporary and relevant in this regard, such as, '[a] methodology by which to recognise when corporate tools become destructive of society itself requires the recognition of the value of distributory and participatory justice' (Illich 1975: 17). As such, if we wish to build a system that prioritizes fair and just labour environments, for example, perhaps including generative AI that is something more than the proliferation of pointless work, conviviality seems a good starting point.

Illich himself gave a name to the kind of technological development needed to create convivial technologies – counterfoil research: 'Counterfoil research also has two major tasks: to provide guidelines for detecting the incipient stages of murderous logic in a tool; and to devise tools and tool systems that optimise the balance of life, thereby maximising liberty for all' (Illich 1975: 77).

The phrase 'balance of life' is critical here, as I am in this article talking predominantly about the current status and potential fate of those engaged in cultural labour. The primary problem identified here in generative AI systems is that they tend towards an increase in output and maintain the same time commitment of cultural workers instead of, for example, improving work–life balance by allowing workers to work fewer hours for the same output. Our task in counterfoil research, then, is to work towards building technologies that affirm the value of human beings and the environments they live in.

Counterfoil research is perhaps best expressed in a work by Andrea Vetter that attempted to map Illich's ideas around convivial tools into a heuristic matrix one could refer to in pursuing technological developments that are better for people and planet (Vetter 2018). Vetter proposes five dimensions to convivial tools and by extension a programme of counterfoil research. The first is relatedness, or the technology's capacity to build and nurture relationships between people and with the environment. The second is accessibility or the ability for anyone to access the knowledge needed to build the technology for themselves, if they so wished. The third is adaptability, or the ability for a technology to be used at both small and large scales, across different cultures and contexts. The fourth is bio-interaction, the idea that technologies should just make no environmental impact but also actively contribute to ecological health where possible. Fifth and finally, the technology should be appropriate and suitable for a local context of skills and materials.

In the context of culture industry labour, I will focus on the first, second and third of Vetter's (2018) elements. The case in the first element is that, at present, generative AI is creating situations where experts in culture industry domains, such as copywriters, are being circumvented by other members of their organizations because it is 'just writing', as in the Reddit example from earlier in this article (Alanbesodope 2024a, 2024b). Similarly, generative AI software has emerged to automate the creation of user personas for design projects, occasionally to the detriment of proper user research and severing a human connection to the end project (Delve.AI n.d.; UXPressia n.d.). In the

1. second, most models and datasets behind generative AI are proprietary and
 2. inaccessible (Appel et al. 2023). And in the third category, while generative
 3. AI seems applicable across contexts large and small, the outputs of generative
 4. AI have so far proven to perform better in English and selected other devel-
 5. oped languages making them non-adaptable to many contexts (Kshetri 2024).
 6. Combining these factors together, we can see the outlines of a system that
 7. is fundamentally developed to serve the interests of capital; that is it fails to
 8. meet the criteria of conviviality in Vetter's (2018) model and should be subject
 9. to a programme of counterfoil research.

10. Though there is an emerging body of research and reporting on the
 11. 'murderous logic' of these tools, to borrow Illich's turn of phrase, what is
 12. needed now is the second type of counterfoil research that which devel-
 13. ops alternatives. The Papa Reo speech recognition and language processing
 14. program is an example of an initiative that uses existing technologies, which
 15. are a vital aspect of generative AI, to enable smaller languages to create alter-
 16. natives (Papa Reo 2024). It employs an alternative model of data governance
 17. rooted in Indigenous knowledge, as there are ongoing, active discussions
 18. about what sources of data are appropriate to train the system on (Kirkby-
 19. McLeod 2023; Taiuru 2023). The idea that technology should be developed
 20. from vernacular and local contexts, rather than centralized and corporate ones,
 21. is at the very heart of convivial design ethics. The dialogue around appropri-
 22. ate use of Māori language data occurs while being part of a broader effort by
 23. the Māori community to preserve the language (Kirkby-McLeod 2023), which
 24. meets the convivial ideal of adaptability and appropriateness to local contexts
 25. (Vetter 2018). Papa Reo demonstrates the feasibility of developing not only
 26. individual generative AI components but also comprehensive digital systems
 27. in alternative ways. At the same time, concerns about the deeper level systems
 28. – e.g. American cloud computing services, English programming languages
 29. – give rise to the spectre of colonialism (Hendrix 2023; Skogstad 2023). It is
 30. not clear how the Papa Reo project would move away from these problematic
 31. infrastructures, or even if it is interested in doing so given the advantages of
 32. using the popular ChatGPT software, but this is an issue worth acknowledg-
 33. ing in counterfoil research such as this. We will require significant political and
 34. social resolve to create and utilize alternatives such as this amid opposition
 35. from Silicon Valley's industry leaders.

36. As a final thought, I want to return to the narrative of Jaron Lanier and
 37. his early steps in developing virtual reality (VR). Though a thoroughly banal
 38. version of VR was presented in 2021 by Mark Zuckerberg from Facebook
 39. (Meta 2021) – as if meetings but with avatars instead of video links to real
 40. people are some revolutionary change – the initial development of VR at
 41. VPL Labs under Lanier showed again that technology development can be
 42. diverse, anarchic and consciousness-expanding. Lanier relates stories of how
 43. being able to resize parts of your body, or even to experience being a lobster,
 44. had the effect of getting participants to often think about the nature of their
 45. interaction with the world (Lanier 2017). The question we might ask now is
 46. whether anything around generative AI as it is currently practised reaches the
 47. threshold that Lanier identifies; that of expanding minds or connecting us to
 48. others and the environment around us. More pertinently for the question of
 49. cultural labour, there is little hint that generative AI as it exists today dramati-
 50. cally alters the nature of creativity, it only makes it more efficient and with less
 51. possibility for uniqueness. Part of this problem is that, like Meta's version of
 52. VR and unlike the early tinkering days of Lanier at VPL, we are developing

this technology within a social and political framework that prefers cultural workers to slave at pointless work rather than explore the limits or develop their practice away from the workplace. In the present context, it is pertinent to consider what aspects or opportunities we are potentially overlooking or failing to engage with as a result.

CONCLUSION

In this article, I have drawn together the threads of Graeber’s critique of pointless work and Illich’s ideas of radical monopoly and conviviality into an analysis of how generative AI has altered the nature of cultural labour. From the testimonies of culture workers online, we can see that new norms are emerging that are squeezing them for maximum productivity while also questioning the very validity of their jobs to begin with now that a computer can perform some of the same tasks to a lesser level. As such Graeber’s concern with pointless work rings true, and here I have extended that analysis by arguing that currently existing AI is seemingly developed for the very purpose of demeaning and extracting more from culture industry workers. As such, I proposed that Illich’s concept of radical monopoly is helpful in thinking about how this way of thinking about culture industry labour is more problematic than any specific piece of generative AI software. I concluded the article with a look towards Illich’s concepts of conviviality and counterfoil research and how, such as in the case of Papa Reo, alternatives are possible should we be able to find the spaces to develop them. How we might produce such social space, and what the alternatives that such projects generate might look like, are questions that deserve further consideration.

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