

1 **Analyzing the Cultural Relevance of AI Generated Art**

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14 *A City in the style of Harlem
15 Renaissance*

14 *People Dancing in the style of Harlem
15 Renaissance*

14 *Tenochtitlan in the style of Mexican
15 Muralism*

14 *Peasants in the style of Mexican
15 Muralism*



23 *An American Landscape in the style of Regionalism*

23 *Conservatism in the style of Regionalism*

23 *Clothes in the style of Feminist Art*

23 *A Face in the style of Feminist Art*

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26 Fig. 1. These images illustrate sets of text-to-image generations generated from the following prompt: "a painting of SUBJECT in
27 the style of STYLE". To see to what extent AI generated art can produce images with cultural significance, we quantitatively and
28 qualitatively analyzed generations from four art movements of different cultural contexts: Harlem Renaissance, Feminist art, Mexican
29 Muralism, and Regionalism.

30 Generative models can now generate images from prompts guided with style keywords, and models have been shown to have successful
31 command over style fundamentals such as color, line, perspective, and so on. However, visual styles exist as more than that and are
32 grounded in culture and contexts. In this paper, we empirically analyze images generated in the style of four art movements with both
33 a quantitative and qualitative methodology to see if pretrained generative models can produce higher-order visual concepts beyond
34 surface level reproductions of style. We find that while generative models have the ability to recreate many of the themes and styles
35 from culturally important art movements, they are often limited in their ability to produce novel, meaningful art. For example, they
36 resort to stereotypical associations such as the color pink with femininity. We conclude with a discussion of how AI generations may
37 potentially be situated against existing art styles and considered as a new art form.

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41 CCS Concepts: • Human-centered computing → Empirical studies in HCI; • Computing methodologies → Neural networks; •
42 Applied computing → Media arts.

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1 INTRODUCTION

Demonstrating that a generative model can appropriate artistic styles has always been a popular use case for generative systems. Recent advancements in multimodal learning such as text-to-image generation have allowed users to generate images in any style that can be described in keywords like art movements and artist names. Experiments have empirically found that state of the art pretrained generative frameworks can borrow and imitate different aesthetic languages in terms of color, technique, motifs, and perspective. [3] However, we wanted to understand if generations could go beyond surface-level replications of style to access and represent the higher order knowledge that gives images context and cultural significance. To do so, we posed and addressed the following research question: to what extent can AI generated art produce images with cultural significance?

2 DATA AND METHODOLOGY

In our investigation of AI generated art, we used a popular open source generative framework called VQGAN+CLIP. [4] The checkpoints and configurations we used were pre-trained on the ImageNet dataset with a codebook size of 16384 dimensions. To look at a diverse set of styles, we looked at four art movements: Harlem Renaissance, Feminist art, Regionalism, and Mexican Muralism. These styles were chosen because they were rooted in different sociopolitical contexts (i.e. activism for race along gender lines, nationalism). Each style was generated with twenty subjects relevant to the art movements (the lists of which is in the Appendix), with the prompt template, “A painting of <subject> in the style of <style>”, and with two random seed initializations for a size of 256x256px. After selecting the better of the two images to analyze, we evaluated each generation on a 1-5 unipolar scale for style expression and subject representation in the generation. From the images which scored highly for subject representation, we chose promising examples to further analyze for their potential to contain cultural significance (i.e. did they seek to express an idea core to the art movement or comment upon the subjects in a way aligned with the movement?).

3 RESULTS

In our analysis of 80 generations across 4 art movements, we found that the AI seemed capable of reproducing the aesthetic logics of each art movements to relevant subjects. The subjects were represented moderately well across generations with an average rating of 3.31 out of 5 across all 80 subjects. We find that the models were able to visualize even subjects that were more abstract (i.e. identity, conservatism) and more niche (i.e. Talented Tenth for Harlem Renaissance, yoni for Feminist art). In exceptional cases, the AI was able to compose the subjects in a manner that connoted higher order principles of a style.

3.1 Harlem Renaissance Generations

We found that Harlem Renaissance generations rated strongly in subject representation with an average of 3.86/5 (Cohen’s $\kappa = 0.06$). Of these generations, one outstanding generation was the “a painting of a city in the style of Harlem Renaissance” generation, pictured in Figure 1. This generation contained many relevant visual motifs like elements of urban architecture. The loose, upward forms of the buildings provide a “sentient” quality to the city which

105 aligns with the common motifs of the time used to react to the conditions of a rapidly urbanizing North. Many of the
106 aforementioned elements are in line with techniques used by Harlem Renaissance artists to portray the industrial North
107 as both a savior and suppressor [6] [2]. However, the generation did not necessarily do what images from the Harlem
108 Renaissance sought to do: which was to uplift the image of Black people, situate African Americans in a larger Black
109 ancestry, or create a unique identity for African Americans [2].
110

111 Another generation which represented the style well was "a painting of people dancing in the style of Harlem
112 Renaissance". This image contained abstracted representations of Black folk in community with one another and
113 dancing in a particular Jazz-like rhythm that characterized much of the media produced during the Harlem Renaissance.
114 This commented upon and could be said to seek to uplift the image of Black people like other Harlem Renaissance
115 genre paintings of the time, which presented Black folk as being able to partake in leisure time, separating them from a
116 chattel slavery narrative and situating them in the context of valid and viable social beings [2]. However, it's unclear if
117 this commentary was incidental or whether it was something learned by the algorithm and "intentionally" generated.
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120 121 **3.2 Mexican Muralism Generations** 122

123 Mexican Muralism generations also rated strongly in subject representation ($\mu=3.6$, Cohen's $\kappa = 0.25$). A subject that
124 generated well in this style was Tenochtitlan, pictured in Figure 1. This generation contains sprawling renderings
125 representative of the former Aztec city-state and various architectural structures reminiscent of an Aztec architectural
126 style. The multitude of human-like figures surrounding these structures could be read as depictions of indigenous
127 people. The aforementioned elements and their tightly packed composition comment upon the idea of Tenochtitlan as a
128 bustling metropolis—large and vast and presumably filled with complex human activity. Such compositional methods
129 fall in line how Rivera-esque techniques applied within Mexican muralist media sought to depict an Indigenous history
130 and assert the validity and greatness of an Aztec civilization[2].
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133 Another highly rated generation was: "peasants in the style of Mexican Muralism". This generation features various
134 abstract human figures whose plain clothes and weathered skin make it possible to read them as lower class indigenous
135 peasants. While indigenous peasants do seem to be represented in some aspects, they are not portrayed in any way
136 that connotes the larger principles of Mexican Muralism as a movement. The Indigenous figures in original Mexican
137 Muralist work were often composed in such a way to signify community, socialist, and or revolutionary sentiment[1].
138 However, the figures in these generations are present without any larger communicative intent. This example illustrates
139 that there is still a gap for AI between representing subjects and styles and producing culturally significant art.
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142 143 **3.3 Regionalism Generations** 144

145 Subjects generated with the style of regionalism on average scored 3.4 out of 5 in terms of subject representation
146 (Cohen's $\kappa=0.188$). A generation where the subject was successfully depicted was "American Landscape in the style of
147 Regionalism". This generation contained vast rural landscapes canonical to Regionalism. The forms of the elements in
148 this natural environment feature a certain sprawling quality similar to how Regionalist artists of the 1930s employed
149 visual motifs to depict an American landscape as something that was "alive" and filled with possibility for westward
150 expansion [2]. Another notable generation was "conservatism in the style of Regionalism". This generation seems
151 to feature some sort of visual blend between a map and an American flag. While it would be plausible to find the
152 aforementioned imagery in a Regionalist painting - it would most certainly not be arranged in such an abstracted
153 manner. Paintings from this movement prioritized realism in a way that the map-like composition of this generation
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157 does not adhere to. This is likely a shortcoming of VQGAN+CLIP, which does not always yield coherent compositions
158 and often produces abstract art better than realistic work.
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160 **3.4 Feminist Art Generations**
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162 Lastly, we look at generations for Feminist art, which on average had a rating of 2.28 (Cohen's $\kappa=0.11$) for subject
163 representation. One of the best generations was "Clothes in the style of Feminist art", as seen in Figure 1. The generation
164 created a visual metaphor by blending clothing with elements of a female body. The body came through in an ensemble
165 of fleshy textures and contours that appeared to hang on a rack the way clothes do. Even though intention cannot be
166 assigned to these generations, one could argue that there is an incidental metaphor in the generation of how female
167 bodies could be compared to clothing: material and objectified—a conceptual message that was commonly referenced
168 and commented upon in Feminist Art[2][5]. A curious trend to note is that overwhelmingly, the generations produced
169 by the Feminist Art prompts all contained, at least to some extent, a pink hue. These pink overtones came from either
170 flesh tones of light-skinned bodies or stereotypical feminine pinks. This can be seen at a birds-eye view looking at the
171 Feminist art generations in the Appendix. The presence of pink as a color in Feminist art, while not entirely elusive,
172 is not nearly prevalent enough to justify it as a component of the Feminist Art style. As to why pink is featured in the
173 majority of Feminist Art generations, we believe that this may be a result of a stereotypical, flat association between
174 women/femininity and the color pink. This association may have been learned from the datasets that VQGAN and CLIP
175 were trained on and, as such, may appear when a prompt contains a similar word like "feminist."
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177 **4 DISCUSSION AND CONCLUSION**
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179 Our results demonstrated AI generated art was largely able to reproduce some many subjects and styles from culturally
180 significant art movements. Some of the most notable generations could be interpreted to have significant meaning that
181 aligns with the ethos of the movements—even if that the meaning was not intentional.
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183 Interpreting art often requires us to extrapolate from generations and assign intention where there originally was
184 none. Because we have rich associative knowledge of culture as humans, we can easily interpret into these generations
185 and imagine intention even where there is none. For example, from the "clothes-Feminist art" generation, one could
186 extrapolate commentary from the incidental visual metaphor to say that a woman's identity could be reductively related
187 to how she dresses or what material items she consumes, or even to the objectification of the female body and the way
188 superficial materialism is often associated with women. However, such a read would technically be overinterpretation,
189 because these generations were created in a vacuum of number optimization, without knowledge as to what potential
190 meanings were related to the visual concepts produced.
191

192 Even if AI can produce images that display cultural knowledge, the question remains as to whether or not these
193 images are valuable in the context of art history. Perhaps it is an unfair comparison altogether to test the AI's capability
194 for conceptual messaging on whether or not it could replicate the works of art movements. The original works of art
195 movements were culturally significant because they existed in sociopolitical contexts, rendering the human condition
196 during particular periods and conditions. The generations the AI produce however, are far removed from any of those
197 contexts — resulting generations that are not nearly as valuable as the images they seek to mimic. Instead, it may be
198 better to allow AI generations to be evaluated along its own terms and with its own specific aesthetic logic. These
199 generations should be interpreted in a way that is relevant to the particular conditions of computational art. In doing
200 this, we may be able to express the conceptual principles of some of the above tested genres in a way that embraces AI
201 art styles as their own artistic medium and vehicle for creative expression.
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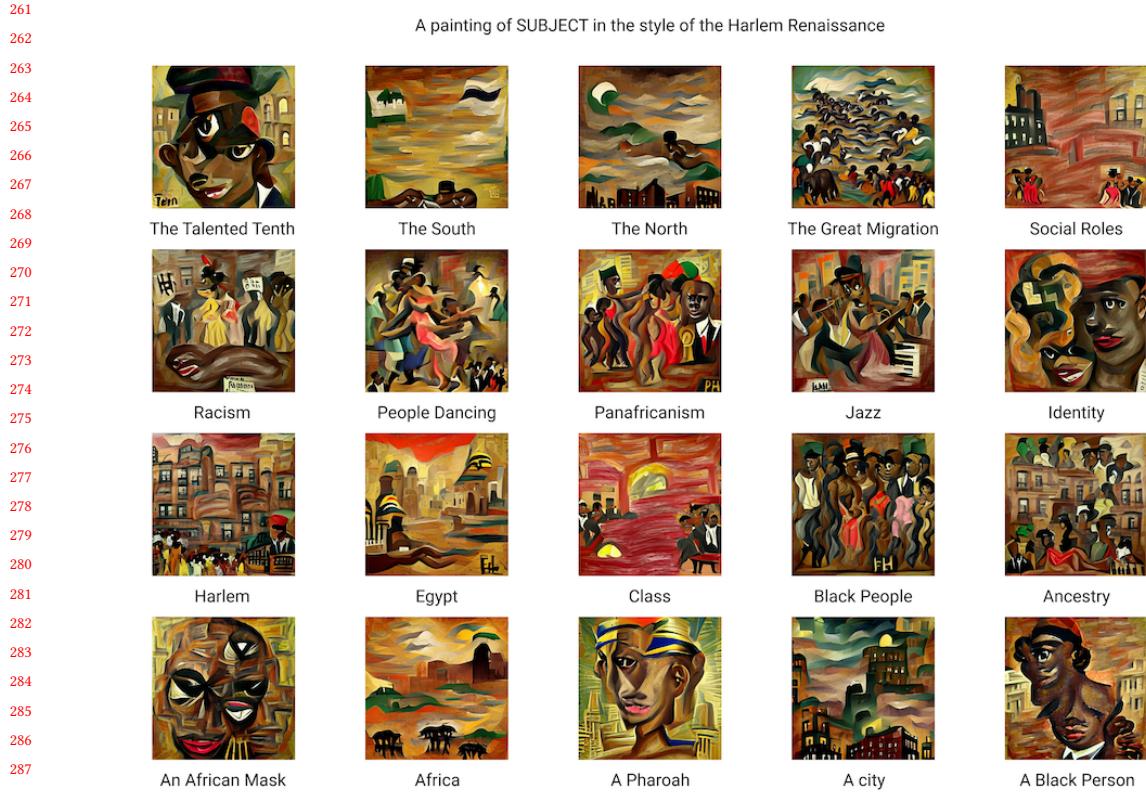


Fig. 2. Sets of generations from the Harlem Renaissance text-to-image prompts.

Subjects for each art movement:

- Mexican Muralism: *Latin America, Indigenous people, Tenochtitlan, Sculpture, Mexica people, Zapatistas, Land, Plants/Flowers, Workers, Peasants, Socialism, Communism, Revolution, Conflict, War, Community, the Nation State, Identity, Social Realism, Mexican Identity.*
- Regionalism: *A farm, A farmer, A cowboy, Roads, An American Landscape, Horses, A factory, A town, A wagon, a car, Industrialism, Agriculture, Populism, Manifest Destiny, Conservatism, Culture, Identity, American Identity, Nationalism, Rurality.*
- Feminist Art: *A man, A person, A body, A phallus, A yoni, A face, Clothes, A portrait, A costume, The gaze, Identity, Social Dynamics, Empowerment, Performativity, Language, Biology, Gender, The patriarchy, The self.*
- Harlem Renaissance: *a Black person, The Great Migration, a Pharaoh, Egypt, an African mask, Africa, a City, Harlem, People Dancing, Ancestry, Societal Roles, Jazz, PanAfricanism, the South, the North, Class, Identity, the Talented Tenth, Racism*

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A painting of SUBJECT in the style of the Feminist Art

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The Self



The Patriarchy



The Gaze



Social Dynamics



Performativity

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Language



Identity



Gender



Empowerment

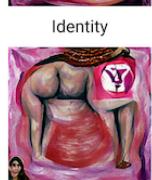


Clothes

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Biology



A Yoni



A Woman



A portrait

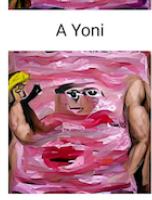


A Phallus

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A person



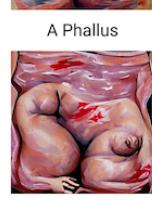
A man



A Face



A costume



A Body

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Fig. 3. Sets of generations from the Feminist art text-to-image prompts.

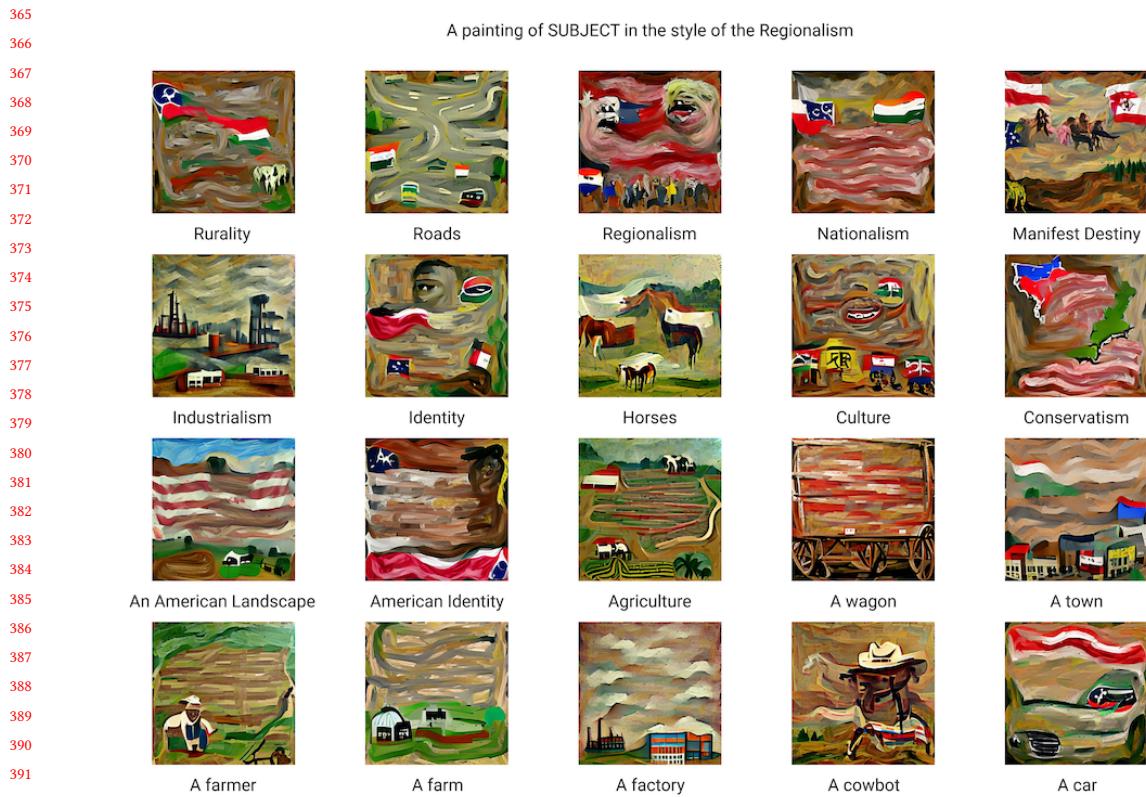


Fig. 4. Sets of generations from the Regionalism text-to-image prompts.

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A painting of SUBJECT in the style of the Mexican Muralism

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Zapatistas

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Workers

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War

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The Nation State

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Tenochtitlan

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Socialism

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Socieal Realism

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Sculpture

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Revolution

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Peasants

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Mexican Identity

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Mexica People

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Latin America

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Land

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Indigenous People

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Identity

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Flowers

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Conflict

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Community

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Communism

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Fig. 5. Sets of generations from the Mexican Muralism text-to-image prompts.

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