Use of AI-Generated Visual Media in Interviews to Understand Power Differentials in Gender, Romantic, and Sexual Minority Students

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Abstract—This work-in-progress briefly outlines the theoretical background, methods, and preliminary results of a qualitative study conducted with gender, romantic, and sexual minority (GRSM) students immersed in higher education spaces. We elaborate on the efficacy of our innovative qualitative methodologies through the use of AI-human art-making interactions during our interviews, which helped to produce richer qualitative data from our participants. Our methodology was constructed using a Foucauldian theoretical framework to inform the framework of this study, focusing explicitly on GRSM students' experiences with power in higher education and when using technology, as well as the ways in which they resist power through the use of technology and AI-generated visual media.

Keywords—queer, qualitative research, AI-human interaction, GAN, artmaking

I. Introduction

Adopting a postmodern approach through the use of a Foucauldian framework, we recognize that simple and one-time data collection methods might not be sufficient to uncover the dynamic, subtle, and interactive structures of power that gender, romantic, and sexual minority (GRSM) students experience. To further elucidate these experiences, we utilized two interviews (one semi-structured, one unstructured). Additionally, the second interview was accompanied by an art-making session using GauGAN's NVIDIA tool to further explore the participants' experiences of power and care of the self as these topics relate to technology, education, and art-making.

We present preliminary findings of this research for two major reasons. First, we aim to disseminate our research methods, as we feel that they are rooted in novel liberatory and critical praxis. Thus, our methods are a novel approach to exploring the experiences of GRSM undergraduate and graduate students. Second, we present preliminary findings of the efficacy of the Artificial Intelligence (AI) art-making

tool as a data collection approach using excerpts from our interviews with our GRSM participants.

This article outlines our methods as they pertain to a series of qualitative interviews that were supplemented by human/AI collaboration. We share our preliminary evaluation of the effectiveness of our methods, including introspection surrounding the AI-generated visual media tool and human/AI interactions portion of our methods. Specifically, we ask: How does the incorporation of AI-generated visual media and human/AI interaction into a qualitative interview protocol shape the data collection process and the quality of the data itself?

II. Theoretical Background

Our main theoretical perspective through which to analyze the power structures that GRSM students experience in higher education and with technology is founded upon the work of Michel Foucault. Foucault's definition of power is quite different from traditional interpretations: Power is not "a general system of domination exerted by one group over another" [1], but it operates through actions and events. Power functions in a distributed fashion, within numerous types of relationships and social forces.

According to Foucault [1], [2], educational systems are part of a societal structure that control bodies through the installation and activation of societal norms and rules. These technologies of domination help propagate profitable power structures [3]. This installation is perpetuated through the constant fear of punishment, achieved using passive techniques such as the illusion of constant supervision, or through micro-punishments such as public humiliation for non-conforming individuals [4]. Resistance of these power structures is notably difficult, as the governing forces are incredibly passive

and difficult to pinpoint [1]. In addition to technologies of domination, technologies of the self are also important [5]. Technologies of self are defined as "actions by which one takes responsibility for oneself and by which one changes, purifies, transforms, and transfigures oneself [in the search of knowledge/truth]" [6].

The broader study explores GRSM student experiences of power in academia, which are built into the knowledge relationships, scientific/technical disciplines, and culture of higher education. It also explores how GRSM students resist, mitigate, or cope with these power structures that occur in their educational systems. Finally, Foucault identifies the notion of self-care as "actions by which one takes responsibility for oneself and by which one changes, purifies, transforms, and transfigures oneself [in the search of knowledge/truth]" [6]. We are also interested in GRSM student experiences where their subjectivities undergo different transformations and changes to form a more resilient barrier to the marginalizing effects of power, as well as how these changes contribute to the reproduction of power in their higher education environments. The larger study aims to outline the existence of specific instances of the perpetuation of these subtle power structures for GRSM individuals within the context of higher education.

III. METHODS

Given the nature of the theoretical background of this project, we utilize qualitative research methods and Foucauldian-inspired discourse analysis to collect and process our data in the larger project. Using this critical theory enables us to better situate, interpret, and understand our findings, potentially bringing light to inequality at both the structural (higher education) and individual (GRSM student) levels through understanding the effects of gender, class, race, sexuality, and disability.

Our methods were designed through this lens. We enable individuals' care of the self process through the re-telling of their stories and through their art-making. Thus, our methods help our participants and us confront issues of injustice directly as we question privilege and inequality in the promotion of and support along pathways to higher education.

A. Recruitment and Participants

Our participants were recruited from solicitations posted to various Facebook special interest groups having to do with belonging to the GRSM community. Our recruitment strategy is supported by research that has found that queer students create unofficial networks of support with other queer students [7], [8]. Our participants represented many identities within the GRSM community, including cisgender, nonbinary/genderfluid, bisexual, lesbian, pansexual, and asexual. Further, our participants were diverse in age, major, education level, socioeconomic status, race and ethnicity, (dis)ability, and nationality. Given the complex intersectionality of our participants' identities and our need for brevity, we do not intend to break down their identities into a tabulated format in this paper.

B. Data Collection

Our data collection methods consists of one 15-minute introductory conversation, one 60- to 90-minute semi-structured interview, and one 60- to 90-minute art-making experience/unstructured interview. All data collection happened via Zoom. In both interviews with our participants, we recorded video and audio of the conversations for later transcription.

For the introductory conversation, participants were asked to meet the interviewer virtually for introductions and a briefing on the purpose of the research, as well as to introduce our study aims before the actual interviews took place. This introductory conversation served multiple purposes through providing information about the study, administering consent, beginning to develop rapport between the interviewer and the participant, and introducing the participant to concepts of Foucauldian power and care of the self. This initial conversation was not audio- or video-recorded. We utilized a semi-structured interview for the first interview. This interview served the purpose of developing an understanding of the participants' subjectivities, the role that technology and art-making plays in their lives, the ways that they have experienced power, and ways that they have engaged in care of the self. At the end of this interview, the first author introduced the participant to the AI art-making software [9], [10] that was used in the second interview.

For the second interview, we had participants share their screen as they created AI-generated art through the GauGAN program (As shown in Fig. 1 for an example of this art; [9], [10]. During the art-making experience, we asked the participants to reflect on and discuss their process and how these processes and their art have been shaped by their multiple and intersecting subjectivities and truth-telling practices. We also asked participants questions that were developed after we watched the first interview and identified insights or points of inquiry that deserved deeper discussion from the participant.

Our interview methodology encouraged students to engage with the reflective introspection necessary for analyzing technologies of power that they have encountered in their lives. The final interaction gave participants the opportunity to reflect on the first interview through another medium besides verbal conversation and, thus, helped the researchers gain a deeper understanding of the participants' experiences that were expressed in a more critical form through art-making and metacognition [11]–[13].

C. Data Analysis

Since the philosophical concepts of Foucauldian power, individualism, and care of the self are abstract, traditional techniques such as narrative analysis or grounded theory do not easily lend themselves to this theoretical framework [14]. We plan to do Foucauldian-inspired discourse analysis to investigate power and subject positions in interviews and art-creation, and content analysis with archival material. The Foucauldian discourse analysis will focus on critical events, networks, practices, subject positions, and techniques of domination and self.

The purpose of this paper, however, is to focus on the impact of the interactions between GRSM students and AI art-making technology. Specifically, we identified empirical evidence from the interviews that describe the impact of this interaction on GRSM students' conceptualization of power in technological and higher education interactions, as well as how they cope with the effects of their interactions with power.

D. Overview of Artmaking Tool

1) GauGAN Tool: The artificial intelligence tool we deploy is NVIDIA's GauGAN [9], [10] which is an open-source generative modeling tool for creating visual, landscape-style images. The core technology features a neural network architecture known as a conditional generative adversarial network (GAN) which maps a stylized or cartoon image of a scene to photo-realistic results, as shown in Fig. 1. The user creates a semantic map or cartoon for a scene where the color of the pixels belong to an object category (e.g. road, tree, sky). The network then takes this representation as input and generates a photo-realistic output designed to match the statistics of real-world images. The network is trained using a wide corpus of paired real images and their stylized doppelgangers to effectively perform this mapping. Since its introduction, the GauGAN tool has received numerous awards including best paper finalist at IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2019 as well as Best in Show Award and the Audience Choice Award in SIGGRAPH 2019, and Best of What's New Award by the Popular Science Magazine in 2019.
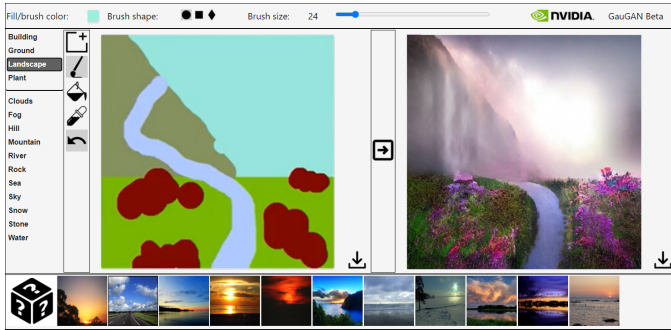

Fig. 1. User interface for GauGAN tool with example participant input (left) and output (right).

2) User Affordances via GauGAN: The use of GauGAN allowed for novel human-AI interactions that suited our study's design goals. The tool featured a wide variety of user input tools and functionality including a paintbrush with varying size, the ability to select different semantic object categories, various backgrounds and images for initialization and seed generation, and most importantly, an undo and erase button. Users could generate a variety of images and scenes with relative ease and the learning curve only took 10-15 minutes for users to get comfortable with the tool. The practice of GauGAN afforded a reflexive care-of-the-self practice to occur during the interview itself, while questions were being asked

to the participant. In the Results section, we describe both advantages and disadvantages of this method of inquiry as reported by our participants.

Further, the choice of an artificial intelligence tool, as opposed to a generic paint or digital media tool, was important to the theoretical framework of our study. Artificial intelligence has a complex relationship with our current society, both having the potential to revolutionize education, industry, entertainment, and technology while also being used in tools that can further social inequity, display bias, and disenfranchise vulnerable members of society. We chose this tool precisely due to its thought-provoking implications about AI. We also felt that how our study's population ways of coping with the effects of Foucauldian biopower and societal influence, intersecting with the use of the GauGAN tool, would yield engaging and productive conversation. In the Results section, we note that the use of an AI tool led to a richness of data elicited from the participants.

IV. RESULTS & DISCUSSION

The participants enjoyed various aspects of the GauGAN tool, example output shown in Fig. 2, with some noting the "extra creative power" they felt by capitalizing on the machine learning algorithms' abilities to create an image. One clear example of this was when a participant shared, "I've tried to express myself through Visual Art and felt super super limited because my skill set doesn't allow me to do that. And this is cool because it kind of overcomes that barrier." Many participants noted that they enjoyed creating beautiful artwork, which could sometimes be "surreal." As one put it, "I would actually like to see that as my wallpaper." Another said, "something's definitely happening in my brain where I just get excited about that coming together." Participants also enjoyed learning new tricks to create features in the output, and others found it "amazing" what machine learning could do. The site's free-to-access nature was also a bonus to some participants who noted that "maybe that's why I don't engage in [painting] because that would get really expensive with paint and whatnot and canvases."

There was a consistent tension contrasting this enjoyment, a tension between the designer's intended output and the generated output of the GauGAN. As one participant said, "I'm like, oh cool it says road, but then I draw what I think is a road, or is actually a line. And it does not look like a road. It... comes out a different way." This lack of predictability was frustrating for some who felt their creativity stifled. Others "accepted that the [output] is gonna do whatever it's gonna do," and these participants tended to create more surreal art. Other participants experienced frustration with the interface, including it's inability to generate output using a user-uploaded picture.

Multiple participants also stated that the GauGAN tool helped them more easily find words to describe their experiences while they were conversing. As one participant said, "I'd say that it definitely helped me find a little more ways of verbalizing. Because I was so focused on the visual aspect

Fig. 2. Examples of participant output.

of it, I didn't think as much about the semantics of what I was saying, and so I allowed that to resonate more with my emotional self." This participant described the act of art-making as a process which allowed them to more easily connect with and find words for their emotions while they were speaking.

Another participant explained an analogy where their emotions were similar to the abstract data type of a computer stack, meaning that if you have unprocessed emotions, they can block access to data (e.g. limit understanding of emotions) further down on the stack. Having the language to describe this analogy helped them understand their emotions, and they then said that "[having this language] is kind of... an analogous sort of tool to expressing yourself through art."

V. Conclusion & Future Work

This work-in-progress outlines the methods that we used and describe the utility of NVIDIA's GauGAN tool to explore GRSM students' hermeneutic practices as a result of experiencing power and privilege in academia. Overall, NVIDIA's GauGAN tool elucidated useful responses from our participants. We will continue to process our data for this project and disseminate our theoretical framework, methodology, and results through various venues, such as peer-reviewed journals and conferences.

Acknowledgment

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